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OSTEOPLASTIC CLOSURE OF THE TRIFACIAL FORAMINA*

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CHICAGO

The accompanying experimental study was undertaken to determine whether or not it was possible so to close a nerve-canal through bone as to prevent the nerve from reaching the surface and functionating. The result may find practical application in various conditions, but primarily it may be of use as a substitute for certain palliative procedures now employed in the treatment of trifacial neuralgia, namely, those methods used when for some reason the intracranial procedures are rejected and when the simpler alcohol injections fail to give relief, as for instance the use of screws of metal or ivory, or paraffin, or guttapercha or other similar devices.

The anatomy of the dog's infra-orbital nerve lends itself particularly well to this method of study. It is really more satisfactory than that in man. The nerve is large and the foramen overhanging. On the other hand, there is greater possibility of infection.

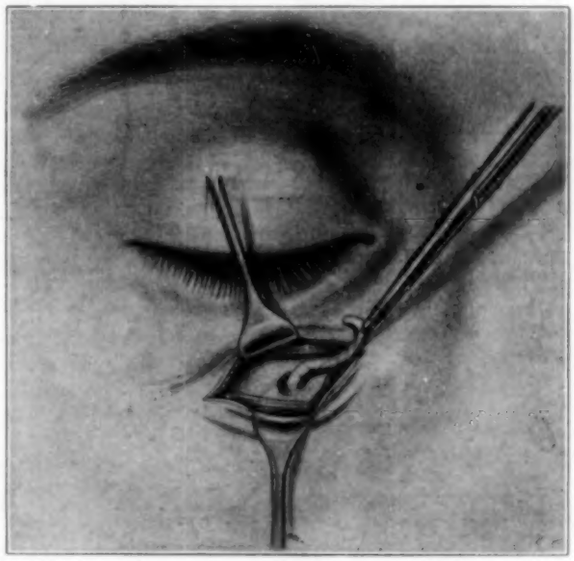

Fig. 1.—Method of exposing and removing the infra-orbital nerve by torsion.

The experimental work falls into three groups:

A. Avulsion of the nerve with curettage of the canal, breaking down of the foramen and covering the area as well as possible by pedicle-flap of adjacent periosteum.

B. Avulsion of the nerve, curettage of the canal and a transplant of periosteum from some other part of the body.

C. Avulsion of the nerve, curettage of the canal, and a transplant of bone to fill the canal.

It was found advisable in the dog to make the incision through the mucous membrane at the junction of the lip and jaw. The dogs were run in series, being killed in forty-five, ninety and 180 days.

An attempt was made to determine the best method of removing the periosteum within the canal and at the foramen with the idea of favoring bone growth and closure of the canal or union with the bone transplant. Various types of olive-pointed burrs were used and others made to order, but it was found in the end that small, sharp curets were more satisfactory. Likewise the best method of avulsing the nerve was studied and various broaches were made similar, only much larger, to those used by dentists in avulsing the nerves of teeth. These also were abandoned as being inferior to simple avulsion. It was found that the best results were obtained by grasping the nerve firmly and twisting very slowly so that from five to ten minutes were consumed in the procedure.

For the sake of conciseness, the detailed report of each experiment, although kept, is not reported here. The results in the various groups may be classified as follows:

In the series with the avulsion of the nerve, curettage of the canal, breaking down of the foramen, and covering the area with a pedicled periosteal flap, the experiments were uniformly successful in obliterating the canal if the work was thoroughly done. Some difficulty was found in preserving adjacent periosteum in good condition for flap transplant, and in no case was it perfectly satisfactory. A similar difficulty was later encountered in the patient operated on.

In the second group with avulsion of the nerve, curettage of the canal and a transplant of periosteum from some other part of the body, the results were not nearly so successful. The nerve grew through in a majority of instances in spite of the fact that infection was infrequent.

In the third group with avulsion of the nerve, curettage of the canal and a transplant of bone to fill the canal, the experiments were successful except in those cases in which infection ensued, a complication that was rather common, incident to the presence of the wound in the mouth. In these cases after a few months the nerve grew out through the osteoporotic

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tissue between the canal wall and the osseous transplant.

In the successful cases complete bony closure ensued. The results were sufficiently satisfactory to lead to the assumption that under favorable conditions the canal would be completely obliterated. Where the result was satisfactory the nerve was found to have grown down along the canal to its full extent and to end blindly at the original point of exit. The bone wall itself on external inspection presented no evidence of a previous foramen. Microscopic sections of the

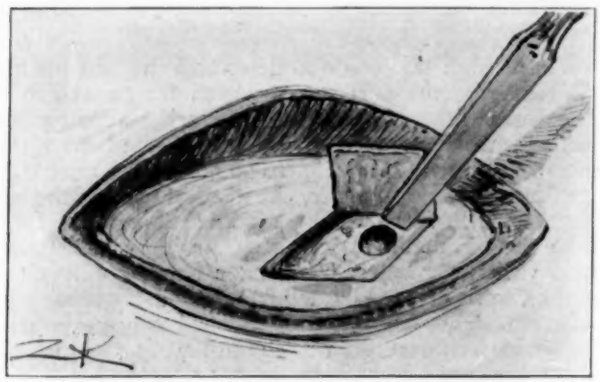

Fig. 2.—Breaking down the rim of the infra-orbital canal.

connective tissue immediately adjacent to the bone and over the old foramen and opposite the nerve ending failed to disclose any nerve-fibers, so that we must conclude that they had not grown through.

CLINICAL APPLICATION

The foregoing results of experimental work are presented as proof of a *principle in surgical pathology on which study may be made in the future* and must not be construed as an advocacy of this method of operation in all cases of tic douloureux. It may be justifiable, however, to suggest lines of future clinical study as they occur to me. It would seem that the procedure would not be indicated in those patients on whom the removal of the ganglion or excellent intracranial operation first proposed by Frazier and Spiller can be done with safety. It probably would not be indicated in those patients to whom alcohol injections give complete relief for a considerable period. It may be justifiable to study its field of usefulness in greatly debilitated patients who are not good surgical risks and who are not relieved by injections or in those patients who refuse intracranial procedures—in other words, where it has been customary to avulse the nerve or fill the foramina with foreign bodies.

It must be remembered that all peripheral operations fail to prevent the return of pain along the filaments that leave the nerve back of its point of exit from the foramen, as for instance, that portion of the infradental that goes to the side of the tip of the tongue. In my patient, however, in which this occurred, it has not given rise to complaint and was elicited only on questioning.

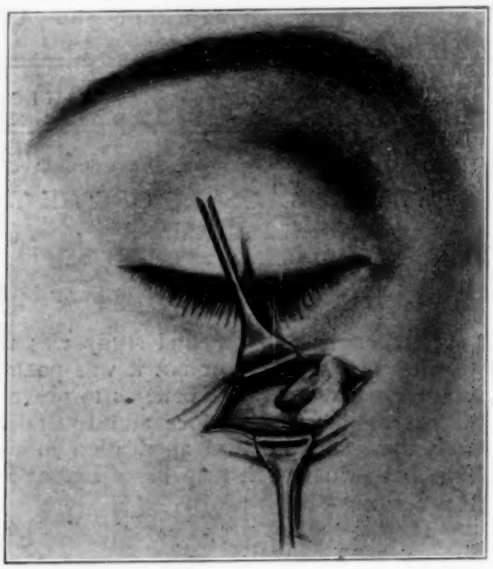

Fig. 4.—Transplanted bone plug in position with periosteum attached.

The work can, for the most part, be done under local anesthesia especially by trunk injection. The method employed in the patient operated on by myself is seen in the accompanying illustrations.

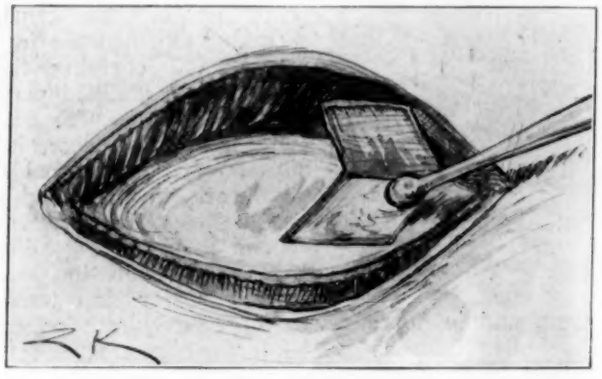

Fig. 3.—Curetting the infra-orbital canal thoroughly so as to remove all periosteal tissue.

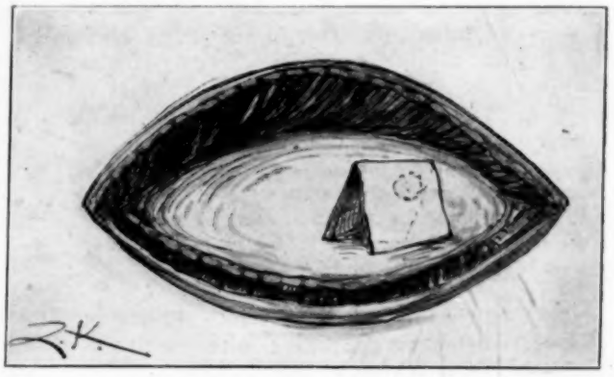

Fig. 5.—Detached periosteum thrown over site of operation. In the operation this could not be as satisfactorily done as would appear from the picture.

In the operation on the infra-orbital nerve the incision was made in the line of the skin-crease and the nerve slowly twisted from its trunk. The periosteum was so thin that a satisfactory pedicle flap could not be made, although this was done as well as possible. The bone was extremely thin and friable, necessitating care in the curettage of the canal. This was done thoroughly, paying especial attention to the foramen.

A small bone plug ¾ inch in length and as near the size of the canal as possible was removed from the tibia, a piece of periosteum the size of a penny being left attached to its outer end. This was then wedged into the canal down to the attached periosteum. The adjacent periosteum was pushed over it and the skin closed by a subcutaneous stitch (Figs. 1-5).

In the infradental branch an incision was made under the angle of the jaw so that the scar would be

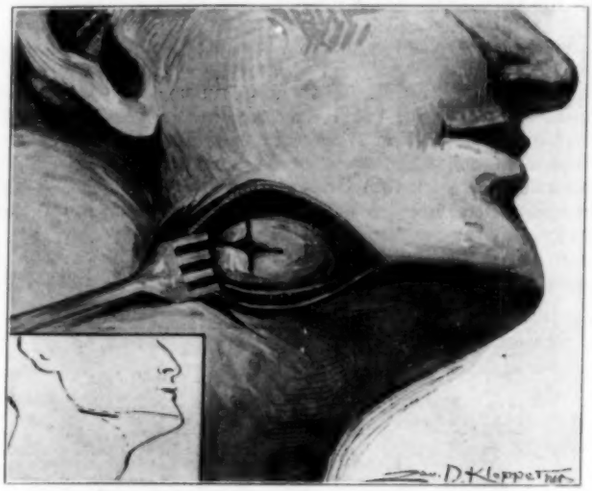

Fig. 6.—Crucial incision over site for bone plug over infradental canal.

out of sight. The skin and muscle were next detached from the angle upward. A crucial incision (Fig. 6) was made in the periosteum at the angle over the area of the nerve; then with a small trephine a button of the outer plate of bone down to the medulla was removed (Figs. 7-11). The nerve was found and twisted out of its canal. The canal was then curetted thoroughly and broken down. The button of the outer

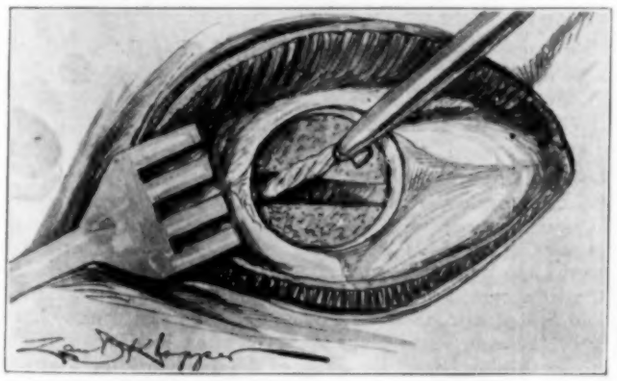

Fig. 7.—Torsion and removal of infradental nerve.

plate was now reinserted, being rotated 90 degrees so that the destroyed canal of the button was at right angles to the canal in the bone, and it was driven into the medulla between the two tables at the proximal side for a fraction of a centimeter. The periosteum and muscle-flaps being now restored, the skin was closed by a subcutaneous stitch. The patient was warned not to use the jaw too violently for some weeks.

A word of warning should be given against extending the infra-orbital incision too far toward the nose, thus endangering the lacrimal sac. Again care must be taken not to injure the facial nerve when retracting the muscle at the angle of the jaw.

I append a brief report of the patient operated on who has been without recurrence of her trouble for nine months, too short a time, certainly, for the final report, which will be made at a later date.

REPORT OF CASE

History.—Mrs. A. L., aged 74, admitted to Wesley Hospital, Oct. 26, 1913, discharged, Nov. 1, 1913, six years ago began to have pains over entire left side of face. They were of a dull, aching character. Patient states that they came

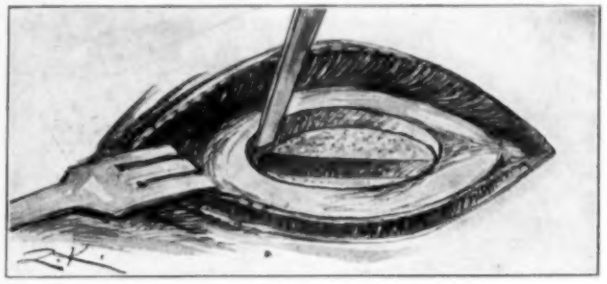

Fig. 8.—Breaking down infradental canal.

on subsequent to the extraction of a lower tooth. They kept increasing in severity but she complained mostly during the day, especially in the morning. She slept all right at night. The treatment relieved her for a period of six or seven months, when the pain came on again, similar in character with the same aching, burning pains.

About two years previous to the time of this report she was at Wesley Hospital and had the nerves injected with alcohol. This relieved the patient again for a period of six months, the pains coming on again at the end of this time similar in character to previous attacks. This continued up to the date of her admission to the hospital, Oct. 26, 1913. The pain has been worse the last five or six weeks, being

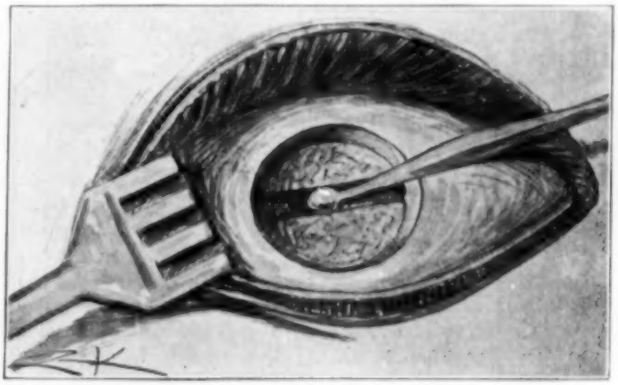

Fig. 9.—Curetting infradental canal.

worse in the morning, but does not trouble much at night. It begins usually on the left side of the upper lip immediately below the ala nasi, then the lower lip on the left side. This then radiates up the left side of the face and terminates in the left temporal region. Patient sleeps well, bowels, constipated; appetite, fair; uses two to three grains of morphin daily.

Examination.—Physical examination showed in brief, a markedly anemic and emaciated patient with tenderness over the supramaxillary and inframaxillary nerves. The supra-orbital was not involved. There was marked pain on chewing and talking.

Cardiovascular Examination: Patient cyanotic; pulse, irregular, extra systole. Vessels hard. Apex, beat fifth interspace. Dulness midsternum to midclavicular line. Apex, two tones, systolic murmur. Aorta, two tones, systolic murmur. Pulmonic, two tones, no murmur. Extra systole every fifth to tenth beat.

Remainder of physical examination is not of importance in the present instance. At operation the inferior dental and infra-orbital nerves were operated on by the method discussed above. Patient made an immediate recovery, although

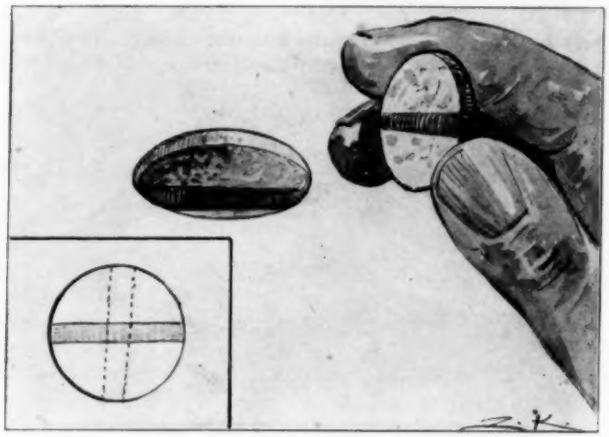

Fig. 10.—Replacing bone plug at right angle to the canal.

for five or six days she had a moderate facial paralysis. This entirely cleared up, as may be seen by the photograph (Fig. 12), at the end of a week. March 28, 1914, the family reported that the patient had ceased the use of morphin and had no pain except that lately she had noticed some pain in the tip of the tongue on the left side. There was no paralysis and the scar was not visible to ordinary inspection. On examination, June 15, 1914, the patient was found to be in similar condition and perfectly satisfied with the result.

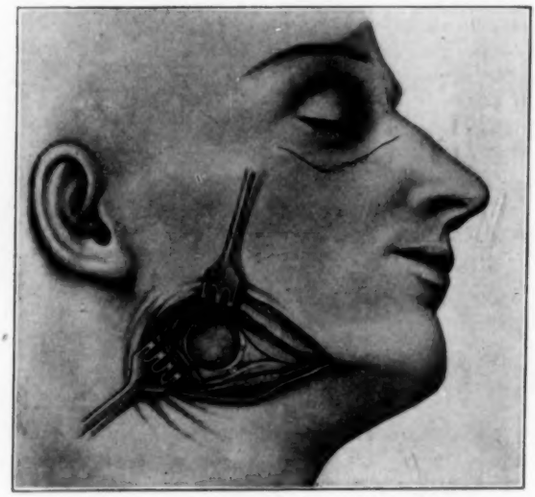

Fig. 11.—Subcutaneous stitch closing over the infra-orbital operation and the method of driving the plug between the two laminae of the lower jaw.

In conclusion I wish to emphasize that this work is presented purely as an experimental and clinical study, and I should not wish to be betrayed by enthusiasm into advocating the operation until further experience has been accumulated by myself and others.

I wish to acknowledge my indebtedness to Dr. Lester H. Hills for assistance in the experimenttal work.

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ABSTRACT OF DISCUSSION

Dr. S. J. Mixter, Boston: The procedure suggested by Dr. Kanavel seems worthy of trial in those cases in which the deeper operation cannot be done. No one could question the advisability of doing the more serious operation if it were possible, but we have all seen cases in which that is not possible and in them this method is worthy of trial. This brings up the whole question of the possibility of stopping the growth of the sensory nerve by plugging a canal. We have all tried, unsuccessfully, generally, to plug the foramina on the face. The inferior dental, the infra-orbital, plugged with screws and other substances, are generally failures. How far a nerve can be plugged is a question. I do not wish to bring up in any way the treatment of trifacial neuralgia, because that is not included in this paper. It is general operative treatment, but I may say that nerves can be so shut off as to prevent recurrence of pain. It has been my custom in doing the intracranial operation not to do the beautiful operation that Dr. Frazier originated and that has been done so successfully, but to do what to me is a less serious operation, that is, divide the second and third division inside the skull, and fill the fossa and lamina with a mass of amalgam. I find that that prevents recurrence of

Fig. 12.—Patient a week after operation.

pain, in my hands at any rate, and is a less severe operation than the one on the root. Dr. Kanavel's method certainly is one that should be tried. On the receipt of his paper a few weeks ago I was so impressed with the value of the procedure that it occurred to me to try it in the intracranial operation, and in that case, instead of using amalgam as I usually have done, I made some plugs from the tibia and drove them firmly in place from the inside of the skull into the foramen ovale and the foramen rotundum. I found it was not so simple, in a way, because bone is hard, the nerves are brittle and it was rather difficult to get a good-fitting plug; but after a little effort the plugs were made, driven firmly in place and the patient has had no trouble so far. Of course the time is too short to draw any conclusions as to the ultimate results, but the procedure seems to me worthy of trial. If these canals can be closed permanently by bone plugs it seems to me it is possible to prevent recurrence of pain.

General Laws.—Ability to recognize individual pathological phenomena is of prime importance, but the power to grasp the meaning of general laws according to which tissues act and react is paramount.—Adami and McCrae.

MYOSITIS

ISCHEMIC MYOSITIS: INFILTRATION MYOSITIS: CICATRICIAL MUSCULAR OR TENDON FIXATION IN FOREARM: INTERNAL, EXTERNAL AND COMBINED COMPRESSION MYOSITIS, WITH SUBSEQUENT MUSCULOTENDINOUS SHORTENING *

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In 1869 Volkmann described a contracted condition of the flexor muscles of the wrist, hand and fingers which he termed an ischemic paralysis, but which came to be known clinically as Volkmann's contracture. He believed at that time that the condition was due to a death of the muscle cells consequent on a prolonged deprivation of the blood from the part, or an interference with the circulation leading to a malnutrition and caused by pressure of a splint or bandage applied, for instance, in a case of fracture of the radius and ulna, or of the humerus near the elbow joint. He stated that very rarely did the condition follow an injury or a fracture in which neither a splint nor a bandage is used. This was true in one case seen by us, in which a contracture of the flexor tendons of the arm followed a trauma, a street-car running over the patient's forearm. It is the only case of the kind we have seen. The muscles of the arm, as the biceps, can have a similar contraction, as shown in many of our cases. However, the condition is most often met with consequent on fractures at the elbow joint or in the forearm, but it does occur in the lower extremity as well as in the upper. Certain it is that a severe contusion of the muscles of an extremity, without fracture or external wound or evidence of injury, may be followed by this contracture. Cases are also recorded in the literature in which a tight plaster-of-Paris cast has caused "an immediate paralysis of the muscles" and a subsequent contracture. In our cases it is fairly clear that hemorrhage beneath the aponeurosis of the upper forearm following fracture or injuries of the deeper structures can cause myositis and subsequent contraction, even when splints or bandages have not been used. These are the internal compression variety. The splint causes the external variety.

Bardenheuer is of the opinion that the condition is caused entirely by a vascular disturbance, that is, that the degenerative changes in the muscle cells are due directly to a venous stasis, and that the cells are poisoned by the metabolic products in the blood-stream.

Other observers are of the opinion that the condition is simply one of localized anemia, and J. J. Thomas regarded it as a case of nerve involvement, laying considerable emphasis on this phase of the etiology. We believe that it is a pressure ischemic myositis, from hemorrhage and effusion into the muscles, aided by the constriction of a splint or bandage or a tight skin, which leads to a myositis from pressure anemia and later to a contracture of the muscle as a whole, and therefore a shortening of the muscle tendon. An acute flexion of the elbow following injuries leads to the same condition. All observers are agreed that ischemic myositis and contracture follow fractures more often than any other cause; in fact, 80 per cent. of these cases follow fractures, especially fractures in the neighborhood of the elbow joint, and among these supracondyloid fracture of the humerus stands out prominently.

As the result of a fracture the tissues are bruised, a blood and serum effusion follows and the tension in the subfascial zone in the forearm can be so great as to cause cyanosis of the whole forearm and hand. A blood-clot forms in the tissues, inflammation follows, with a deposit of the inflammatory products in the tissues. We believe that the injury to the artery plays little or no rôle in the destruction of the protoplasm of the muscle cells. It is the pressure which causes the cell destruction, unless it be the continuous forcing of blood into the tissue after the venous circulation is retarded by the tension on the elbow veins. The obstruction is in the veins and not in the artery, as the great edema always indicates obstruction to return circulation and not to arterial circulation. Arterial obstruction leads to dry gangrene; venous to wet gangrene. The radial pulsations are present throughout the entire course of some of the cases. This should not be so if the artery were injured.

We have seen a large number of these cases and are convinced from our experience that it is the tight bandage, aided by the tight skin and fascia, that does the mischief. The damage is practically all done within the first forty-eight hours after the application of the bandage, or after the acute flexion of the forearm, and we have seen one case in which the damage was present as early as six hours after the application of the bandage. We are convinced from our observations that muscular contraction from trauma of the elbow joint is most commonly the sequence of bandaging. It is a traumatic myositis, the result of pressure produced by a circular bandage or a splint applied too firmly against the skin, fascia and muscles of the arm or forearm, so resisting the edema traumatica that cellular ischemia and necrosis result.

All the damage, so far as the myositis is concerned, is done within the first seventy-five hours, but the contraction of the muscles and the flexion deformity of the fingers does not show itself fully until weeks have elapsed, four to six, the fixation becoming permanent in from ten to twelve weeks. It then remains stationary, except for the additional deformity which is produced by the growth in length of bone without a growth of muscle. This makes it appear as though the muscles were continuing to contract, which is not my view of the case. The damage is done so quickly that this fact and a study of the symptomatology lead one to the conclusion that constriction of the forearm is the indirect cause of the contraction. One must bear in mind, too, that the lesion is always on the volar side of an extremity, the side on which the large arterial trunks are situated. In other words, it is always a flexion contraction and not an extension contraction, notwithstanding that the posterior splint will have as much pressure on it as the anterior, as it must act as a counter-support for the bandage or cast.

There is not a paralysis of the motor nerve as a result of the ischemia, except when the nerve is especially compressed.

The nerves may be involved as a result of (1) severe primary inflammatory infiltration of the tissues

* Read before the Section on Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

pressing on the nerves; (2) by diffuse pressure of the primary myositis, which I very much doubt; (3) by cicatricial contraction on the nerve, also doubtful; (4) by direct traumatic compression to the nerves, always possible; (5) by the pressure of excessive or exuberant callus; (6) by division of the nerve.

The term "ischemic paralysis," with muscular flaccidity and elongation, may be used in these cases of nerve involvement as indicative of its being a complication of an ischemic myositis; but even then we believe that it would be far better to term the condition an ischemic muscular atrophy or myositis with paralysis. So far as the real pathologic condition is concerned which is responsible for the contracture, it is purely an anemic myositis, as we believe, the result of pressure by a cast, bandage or splint on an edematous infiltrated tissue. We have similar examples where extremities have had constrictors on for hours at a time for the emergency suppression of hemorrhage, with temporary ischemic neuritis, or axonal transmission is suspended but is not followed by contracture. When a bandage is applied too tightly around the knee, for example, or if a plaster cast is applied to the knee and remains uncut, the external popliteal nerve may be compressed as it passes over and around the neck of the fibula, winding from behind forward. This results not in a *muscular contraction*, as we see it everywhere else in the body, but in a *paralysis* and *elongation* of the muscle, which in the lower extremity is recognized as a drop-foot.

Fig. 1.—Contraction of knee, result of myositis ossificans. The thickening and induration of the blood-vessels is shown well at A. The deposits in the muscles are numerous and of considerable size.

It is a common sequence of a prolonged Buck's extension, or the pressure of a plaster cast on the nerve, or of its compression by a splint or circular bandage. It results in a paralysis of all the extensor group of muscles on the anterior surface of the leg, and later a contraction of the calf muscles follows, causing a talipes equinus. The drop-foot so commonly present after fractures of the leg and thigh is a dressing sequence and not an injury sequence, and is due to a degeneration of the protoplasm of the motor neurons, known as the axis cylinder. The nucleolus of the neurons in the anterior cornu is not disturbed.

Occasionally, in traumas to the arm, forearm, thigh and leg, the muscle bellies are cut through to the bone, and extensive hemorrhage takes place into them. The muscles become adherent or united to the periosteum, causing their fixation and immobilization, so that voluntary contraction or extension cannot be produced below the point of muscular fixation. Absorption of the adipose tissue may follow this contusion, and the skin is frequently attached directly to the aponeurosis or belly of the muscle. A myositis ossificans may occur, and when it extends into the muscle for a considerable distance it not infrequently produces a contraction and a limitation of motion. Intramuscular angiomas, as the result of trauma or infection, may have a phlebitis, which in turn causes a deposit throughout the muscles or muscle group of an extremity, resulting in contraction and fixation, with permanent deformity, as shown in one case (Fig. 1).

Now, as to the symptoms of this condition: Let us consider the cases occurring in the upper extremity, as these are, after all, the most common as well as the most important. The first symptom noted is a stiffening of the fingers and a swelling of the fingers, hand and forearm. In most cases there is also a discoloration, a cyanosis, although in one of our cases it was stated in the history that there was no discoloration at any time. Occurring almost simultaneously with these objective symptoms is *pain, usually intense;* the patient, whether child or adult, does, as a rule, complain of the pain very much, though by the attendants and friends it is regarded as a necessary adjunct or concomitant of the fracture. There is soon limitation of motion and then complete loss of motion in the fingers. If the constricting agent, the hemorrhagic edema, the bandage, cast or splint is not removed, the swelling and cyanosis may increase in degree, although the pain gradually lessens in severity, and after a few hours or days disappears entirely. Finally, the swelling and cyanosis disappear, but normal motion in the fingers is not restored. In some cases the symptoms are very slight in degree. The patient may not suffer severe pain at all, but the result to the muscle is the same. The swelling of the forearm and hand is always present in the early hours and gives the signal of danger.

The progression of the pathologic changes is rapid. The electrical reaction of the affected muscles is first suspended, except in the cases in which there is an associated nerve lesion, when the reaction of division or degeneration may be present.

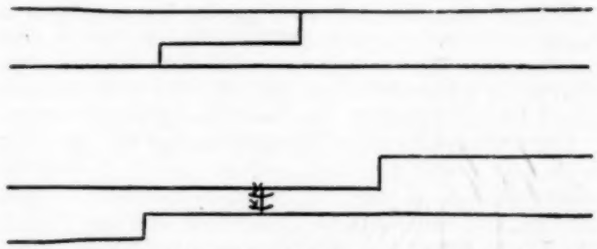


Fig. 2.—Method of tendon elongation. Double L incision and approximation by suture of long ends of two L's.

Let us view concisely the symptom-complex as it occurs in one of these cases, say following a supracondyloid fracture of the humerus. A fracture is not necessary, as is shown in one of our cases. There is first the injury of the joint and the surrounding tissues, causing an infiltration of the tissues and a compression of the vein which results in a venous stasis. Second, the *local infiltration* in the upper forearm, severe in degree, causing a woody hardness, bronze glistening skin and severe pain, the result of the venous stasis in the subcubital tissues. Third,

degeneration and atrophy of the muscle cells and cicatricial formation. Fourth, contraction of the muscle scar and tendons leading to a deformity of the hand and fingers. Fifth, electrical changes in the muscles, if much muscle tissue is destroyed or when the nerve-supply is injured in the manner stated above. The paresthesias, anesthesias and hyperesthesias are accounted for by the associated nerve lesions.

There may also be some constitutional disturbance, such as elevation of temperature, some malaise, sensations of chilliness, but, as a rule, these are absent or so completely overshadowed by the *pain* that no notice is taken of their existence. In a few cases the interossei and lumbricales are also involved; that is, there may be a slight atrophy. The most characteristic and at the same time early severe symptoms are the pain and the swelling. The other symptoms are in the nature of associated symptoms, but should be looked for in making the diagnosis.

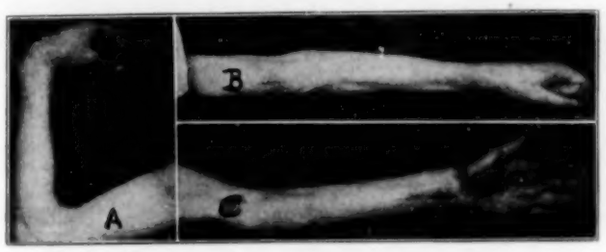


Fig. 3 (Case 2).—*A*, position of hand before operation, the result of forcible contraction, being flexed at right angles; even in this position the fingers could not be extended. *B* and *C* show the degree of flexion and extension of the fingers five months after the tenoplasty was done on the flexor tendons.

As to the late diagnosis of this condition: The deformity of the hands and fingers is in itself diagnostic. It is the typical claw-finger, *main-en-griffe*. The fingers are flexed into the palm of the hand when the wrist is extended or partially extended, and even with the use of considerable force the fingers cannot be straightened. The metacarpophalangeal joints are not flexed. When the wrist is flexed, the fingers can be extended wholly or partially, except in the very severe cases, when the interphalangeal joints remain more or less flexed. As the condition progresses the wrist-joint may likewise be flexed and the finger-nails are forced into the palm. The forearm is slightly pronated and the elbow becomes somewhat flexed. The condition is then accompanied by wasting of the flexor muscles, and it may reach so great a degree that the muscles are no longer palpable, but in the place of muscles one feels a hard rope-like mass. Except for the flexion of the joints, they are otherwise normal; that is, their anatomic structure remains unchanged. On the anterior surface of the wrist-joint it is always possible to see or at least palpate the tense tendons of the flexor muscles. They feel like a bundle of large violin strings, and they are made more tense or more prominent on every effort to extend the fingers.

In arriving at a late diagnosis it is well to consider the following if one would avoid falling into error: First, the history of a fracture, trauma or infiltration of the tissues, accompanied by pain; second, swelling of the hand and forearm, cyanosis and severe pain in the forearm, hand and fingers; third, amelioration of the symptoms on the removal of a constricting bandage or compressing splint, or on straightening out the flexed forearm; or fourth, the infiltration continues to increase in degree in spite of the removal of the bandage; fifth, in complicated cases the presence of anesthesia or paresthesia; sixth, in complicated cases the absence of the radial pulse (this is rare); seventh, they show no improvement with time, but, on the contrary, become worse, and are not materially benefited by massage or electricity.

The treatment may be divided into (1) prophylactic, (2) non-operative, and (3) operative.

Prophylactic treatment consists in—

A. Avoiding the immediate application of compressing splints or circular constricting bandages or casts.

B. Permitting the forearm to assume the position of greatest comfort for twenty-four or forty-eight hours, unless there is a backward dislocation of the elbow, which should be corrected.

C. *The elbow should never be fixed in a flexed position* immediately after the accident.

D. If the *cyanosis* still continues with the forearm extended and elevated, the fascia on the antero-ulnar side of the forearm should be split for a distance of 3 to 6 inches subcutaneously. This can be done with a tenotome without any danger of compounding the injury and should be done within twenty-four to thirty-six hours, if good results are to obtain. (If the forearm is dissected one can see the firm capsule surrounding the flexor group of forearm muscles in its upper 6 inches.)

E. Put on the fixing bandage later when the swelling has materially subsided.

F. The displacement of the fragments can be restored six to ten days after the fracture just as well as on the day of the fracture, and with much less hazard to the extremity.

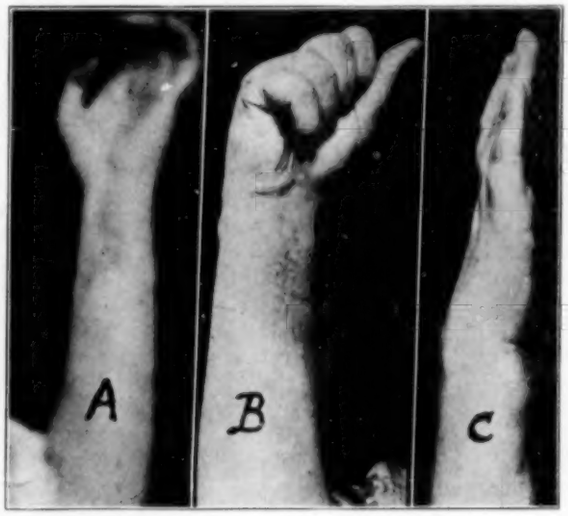


Fig. 4 (Case 3).—*A*, position of hand and fingers before operation. *B* and *C*, degree of flexion and extension one month after operation. The range of motion was normal.

Bandages and splints *should never be applied for the purpose of reducing a fracture*, and rarely ever for the maintenance of position *by force* after reduction. They are simply immobilizers or means for limiting voluntary or mechanical disturbance of the bones after reduction is effected. I have seen in the last five years upward of fifty cases of this type, involving the upper extremity, which shows how common the lesion is. In not one of these cases was there any paralysis of sensation or motion, showing that the nerve was

functionating properly. The limitation of motion was due to the contraction of the muscle following the pressure myositis. The treatment of fractures at the elbow joint by the non-bloody extra-articular nailing permits one to place the forearm in any position desired immediately after the nailing.

The non-operative treatment aims at restoring function in the damaged muscle by means of massage combined with passive movement, such as extension of the wrist or finger joints, supination of the forearm and extension of the elbow. Faradism and galvanism may be resorted to, but have little or no effect. Electrical treatment is not essential, nor is it productive of good results when the cases are severe or recognized too late to be amenable to the prophylactic treatment.

Fig. 5 (Case 4).—Position of hand and fingers before operation. The fingers can be extended with the wrist in flexion. (No photograph after operation. Usual result.)

In 1908 Jones of Liverpool reported a method of treatment which he had resorted to with good results in a number of cases. He used an adjustable splint, which was placed on the forearm and the palmar surface of the hand, with an extension along the palmar surface of each finger. This splint is adjustable by means of set-screws for the wrist and fingers separately. The principle of the treatment is to straighten the splint gradually, a little each day, so that the fingers are straightened out and finally the wrist. The process is continued until the fingers are fully extended with the wrist first sharply flexed, and then the wrist is likewise forced into extension until it is in full extension and the fingers in hyperextension. Later, massage and electricity are resorted to. Jones has had good results with this method, but it has never become popular. Sayre of New York used this splint in one case, and was well satisfied with it. Naturally, the treatment must be carried on over a great period and can only result in good when the scar tissue is limited.

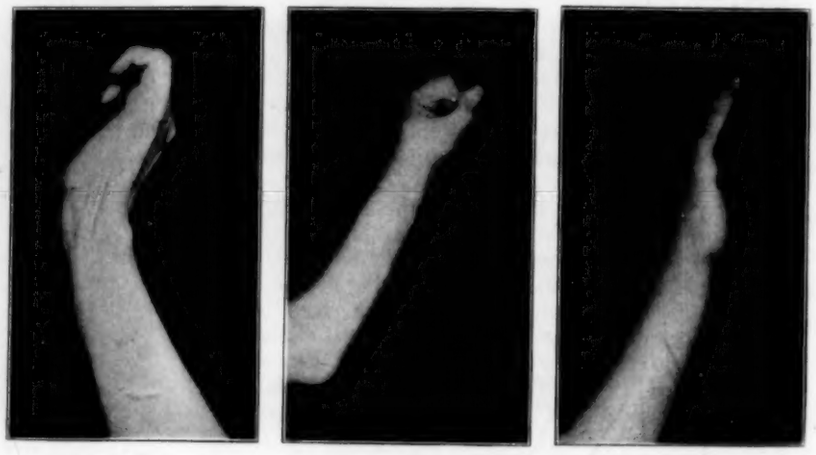
Mikulicz devised the operation for resection of portions of the bone; that is, the ulna and radius in the case of the forearm. This method has been practiced by a number of surgeons with varying success. The principle of the treatment is to shorten the bone sufficiently to permit of bringing the fingers and wrist into a fully extended position. The section is made obliquely and the divided ends of the bones are fastened together with wire, plates or any other method which the surgeon may choose. The great danger of this operation is the possibility of the occurrence of a nonunion, and for that reason it has never become popularized to the extent that it is used in preference to other methods. However, Mikulicz has stated that he has had good results and he should have had when asepsis prevailed and union took place.

Bardenheuer advised an oblique division, or even a transverse division, of the muscles, done subcutaneously, allowing the muscle ends to slide by one another, so that when union of the cut ends occurred the muscle was longer than before. This should not be attempted. The principle of this plan has been used by us rather extensively in lengthening the Achilles tendon, but for an entirely different pathologic condition. Transplantation of the flexor and extensor tendon insertions has also been practiced, although only to a very slight degree.

Finally, there is the operation of tenoplasty, consisting in the lengthening of *all* of the flexor tendons in the forearm just above the anterior layer of the annular ligament. This is the operation which we have performed and with such a uniformly good result that we see no reason for changing our plan of procedure. The operation should not be done until the contracture has reached its maximum, and on account of the danger of adhesions forming to the annular ligament, the work must be done well up on the forearm, or provision must be made to prevent the occurrence of these adhesions.

The principles of treatment consist (*a*) in the correction of the deformity by tendon elongation, not mere division; (*b*) in balancing the muscle groups, so that subsequent contraction and deformity do not occur; (*c*) in the transverse division of such portion of the joint capsule and forearm fascia as is necessary to permit of a full latitude of motion in the joint at the time of operation.

The first is accomplished by the elongation of the flexor tendons by means of a ⌐-shaped incision and division of the tendon (Fig. 2). Each tendon should be elongated sufficiently so as to leave a good slack at the time of the primary correction. If possible, adjacent tendons should not be divided on the same plane.



A B C

Fig. 6 (Case 7).—*A*, position of hand and fingers before operation; *B* and *C*, degree of flexion and extension seven weeks after operation.

To avoid uniting wrong ends of tendons to one another, a sort of crossing of the wires, the sutures should be inserted in the ends of each divided tendon immediately after the division, not tied, but clamped with a forceps and laid aside. The degree of elongation should be estimated by straightening the fingers and extending the wrist to the fullest extent after division and before approximation. This lengthening may need to be made for as great a distance as 3 inches.

but the degree of lengthening does not in any way increase the difficulty of the operation or militate against the final good result.

When the tendons have all been elongated and sutured with a very fine chromicized gut or silk, if the hand still does not come into a fully extended position, the capsule of the joint should be divided across the anterior surface of the wrist joint. The line of tendon division is covered by a pedicled flap of fat and fascia

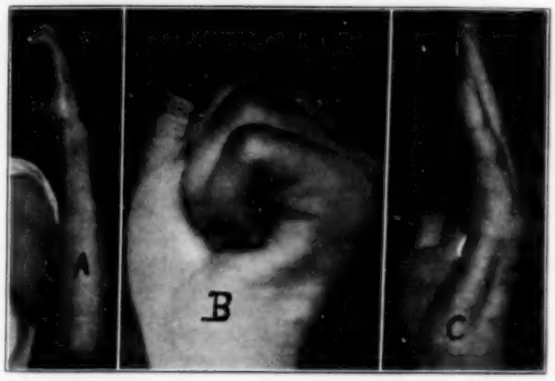


Fig. 7 (Case 8).—*A*, position of hand and fingers before operation; *B* and *C*, flexion and extension eight weeks after operation.

taken from the side of the wrist. When this cannot be accomplished, the point of union or approximation should be surrounded by egg membrane to prevent tendon agglutination, or a free fat flap should be transplanted into the space. When the sutures are tied and the tendons replaced, a portion of the tendon sheaths or the fascia and fat from the inner or outer side of the forearm should be swung in between the tendon groups and sutured, so that each tendon will lie in its separate compartment. Unless this is done, the tendons will become fixed to each other transversely, and the muscles will move as a *group* in place of *individually*. This tendon elongation is ideal in its results, if one attains asepsis and has some muscle cells remaining to contract when the tendon is elongated.

The *division of the joint capsule* associated with elongation of tendons does not receive sufficient attention in the literature on the subject. It is necessary if a permanently good result is to be obtained. After prolonged contractions in the neighborhood of the elbow, even after the biceps tendon has been elongated, the forearm may not come down into a position of extension until the anterior capsule of the joint is divided. After this is done the arm can be forced down gently, and sometimes it drops down, without any previous stretching of the brachialis anticus. If resort is had to stretching, care must be observed not to injure vessels and nerves. Occasionally a complete paralysis of the muscles of the forearm has been produced by injudicious stretching, which has caused an injury or trauma of the musculospiral, median and ulnar nerves. This paralysis is due to a suspension of transmission of nerve impulses in the axons by what I believe to be an edema consequent on the stretching. It disappears in from two weeks to four months, and in every case of the kind which I have seen the function of the muscles was completely restored. Failure to divide the joint capsule is the most common cause of failure in this class of cases (Case 2).

If the anterior or posterior group of tendons, that is, the superficial or deep flexors, are contracted to such a degree and fixed to the bone, that a plastic operation cannot be performed, then the operation of excision of a section of the bones of the forearm should be resorted to, so as to shorten the forearm and the muscles and tendons are then at the same time placed under favorable conditions for mobility. A fat and fascia flap should be interposed between the muscles, tendons and the bone to prevent the recurrence of the adhesions. If pedicled flaps cannot be obtained from the tissue around the seat of operation, then the fascia lata of the trochanteric region always affords an ample supply of tissue for this purpose. We have used such detached flaps of fat and fascia in a number of cases for various purposes; it has always healed in and we have been well satisfied with the result. It is essential that the periosteum and the skin should not become attached to the line of the new union of the muscles or tendons, as these fixations are a great impairment to motion in subsequent muscular contractions and relaxations. It is of the greatest importance that superlative asepsis be attained by never touching any of the tissues with the gloved hand. The skin is closed with a subdermal catgut stitch and a horsehair dermal stitch.

As to the after-treatment of these cases: The arm is dressed in a wire cage splint, placed on the dorsal surface of the forearm and hand, with the wrist in hyperextension and the fingers straight. The arm is kept elevated on a pillow, so as to prevent edema in the forearm and the area operated on. The fingers are watched daily—in fact, hourly—and on the slightest complaint of pain on the part of the patient, or of the appearance of a swelling of the fingers, the bandage is loosened. The stitches are removed on the tenth or twelfth day, and the patient is encouraged to flex and extend the fingers as often as possible. We have not had a single case in which the result was

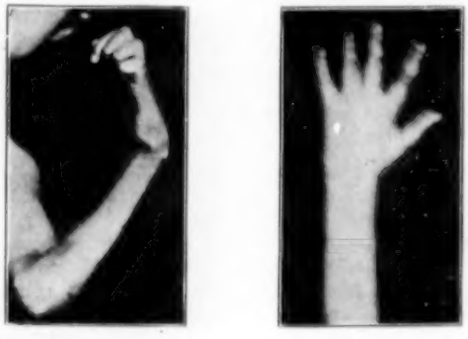


Fig. 8 (Case 9).—*A*, position of hand and fingers before operation; *B*, degree of extension six weeks after operation. (Flexion was also nearly normal, but the photograph was so blurred as to make it worthless for printing.)

otherwise than as expected—that is, the patient regained practically full power of flexion and extension. Voluntary motion should be attempted after the tenth to fifteenth day, depending on the age of the patient. It should never be forced to the degree of causing severe pain. Gentle transverse massage may be used to advantage. It often takes months to develop contraction sufficient to give full range of motion in the muscles.

CONCLUSIONS

1. The contracted wrist is always a sequence of cicatricial contraction following myositis.
2. The myositis is of pressure or infiltration origin or acute edema or hemorrhage.
3. The drop wrist is of nerve origin.
4. The extensors are rarely involved in these cases, though we have seen two of positive splint pressure origin.
5. The prophylactic treatment gives excellent results, and should always be resorted to immediately on the manifestation of the pain, swelling and cyanosis syndrome of symptoms.
6. The early tenoplasty is the ideal operation, when the disease is fully developed.
7. Capsulotomy should never be overlooked in the proper cases.
8. Resection of the bones is admissible in cases not amenable to tenoplasty.
9. The operation should be performed as soon as the acute symptoms have fully subsided, three to four months after the accident.
10. Correction of malunion should be instituted before the tenoplasty operation.

REPORT OF CASES

The following is an abstract of a few illustrative cases:

Fig. 9 (Case 11).—Position of hand and fingers before operation. With the wrist flexed the fingers are well extended.

CASE 1.—Man, aged 24, sixteen years previously had fractured the left radius at the junction of the lower and middle thirds. The fracture was reduced and anterior and posterior splints were applied and left on for five or six weeks. In the course of the next few months the patient noted an increasing inability to extend the fingers. Various attempts at forcible extension failed to relieve the condition. The flexor tendon of the little finger was elongated and the ulnar and median nerves had been exposed and freed but without any result. On admission to the hospital the patient had a typical Volkmann's contracture; the muscles reacted to voluntary impulses and the faradic current, showing that there was no motor neuron lesion. In November, 1902, all the flexor tendons were lengthened from 1¼ to 2¾ inches with good result. One year later a second additional lengthening was made and was followed by a perfect result. The patient is a surgeon and his hand is as good as its fellow.

CASE 2.—Man, aged 19, sustained a fracture of the left arm near the elbow ten years previously. A plaster cast was applied with the arm flexed to a right angle at the elbow. During the six weeks the cast was on, the patient had great pain in the forearm with enormous swelling of the hand and fingers. When the cast was removed the arm was flexed at a right angle and there was only 1 inch range of motion in the elbow. The wrist was flexed and the fingers contracted on the palm with great atrophy of the muscles of the forearm and arm. The muscles reacted to the faradic current. The treatment in this case (June, 1909) consisted of elongation of the biceps tendon and as this failed to increase the motion materially, the anterior portion of the joint capsule was divided transversely, immediately restoring a full range of extension. Four weeks later all the flexor tendons of the forearm were elongated from 1½ to 2¾ inches and the anterior capsule of the wrist joint was divided transversely. The result was complete restoration of motion. The patient now is a good amateur pianist (Fig. 3).

CASE 3.—Woman, aged 26, sustained a simple Colles' fracture with subsequent infection of the skin wound, which discharged pus for eight weeks and then sloughed over an area of about 4 inches square. The result was a stiff wrist and contracted fingers. Massage and electricity failed to give relief. Inquiry elicited the information that the forearm had been dressed with an anterior wood splint, causing much pain and swelling of the hand. Ten days later an abscess just above the wrist was opened and then followed the long period of pus discharge and sloughing of the skin. The flexor tendons were found adherent to the bone in a mass and were dissected free and lengthened for from 2 to 3 inches. A pedicled flap of fat and fascia was placed between the tendons and the bone. The result was eminently satisfactory. The patient regained a normal range of motion and resumed her professional work on the stage as a harpist (Fig. 4).

CASE 4.—Patient, aged 5, sustained a fracture of the elbow-joint. A circular plaster cast was applied with the arm flexed to a right angle. The following morning the hand and forearm were swollen and at the end of forty-eight hours the child was suffering excruciating pain. The hand was cyanotic. When the cast was removed six weeks later, the elbow-joint was fixed in flexion, and the fingers were flexed into the palm of the hand. Tenoplasty was done on the flexor tendons with good result.

CASE 8.—Man, aged 24, sustained a fracture of the olecranon. The following day the fracture was reduced and the arm was wrapped in an adhesive-plaster cast extending from the thumb up to the middle of the arm, with the elbow in full flexion. The hand soon began to swell and became so painful that four or five days later the adhesive was cut, except for a distance of 4 inches directly over the wrist. When the adhesive was entirely removed, three weeks later, the hand was stiff and swollen. The fingers were flexed and could not be extended without assistance. The degree of flexion increased. We performed the usual tenoplasty with a good result (Fig. 7).

CASE 9.—Patient, aged 11, sustained a supracondyloid fracture of the humerus. After reduction of the fracture, a metal right-angle splint was adjusted to the inner side of the arm and secured in place with a roller bandage. As soon as the boy regained consciousness he complained of pain in the arm, which increased in severity and was shortly followed by swelling of the hand. Eighteen hours after the injury the hand was considerably swollen. Not until the third day were the bandages loosened. The splint was left on four weeks and then the patient could not flex or extend his forearm fully, the fingers were drawn into the palm of the hand and he was unable to extend them. At the first operation which we performed a projecting fragment of bone was removed from the anterior surface of the humerus to restore normal elbow motion. The result was perfect. At the second operation the flexor tendons of the forearm were elongated 1½ inches. The full normal range of motion was restored (Fig. 8).

ABSTRACT OF DISCUSSION

DR. ERNEST LAPLACE, Philadelphia: The better understanding of fractures must be based on pathology. A fracture is necessarily attended by hemorrhage which infiltrates the tissues. We cannot hope that this will disappear without leaving some fibrin or hematin infiltrating the histologic elements of the parts. If the surgeon undertakes the treatment of a fracture, as a plumber solders a bit of lead pipe, without regard to the soft structures, then he fails signally. There is no routine treatment of fractures. Due attention must be given to the swelling and to the local histologic injury in the individual case, that the ultimate result may be attended with the least impairment of function. Therefore, whether splints, plaster-of-Paris casts or any other method be resorted

to, the result must not be lost sight of. There is no post-haste in the treatment of the fracture itself. Attention should, however, be given to the soft structures that these may be relieved from their traumatism as soon as possible. This is especially true in children in whom it has been demonstrated that even if the immediate union be not at first creditable, time will readjust the fractured ends with remarkable precision as Kummell has shown in a large series of cases by Roentgen-ray demonstration. When fractures are forcibly put into casts or subjected to undue pressure at the time of the first dressing, such injury may result to the soft structures as may lead to permanent contraction and other impairment of function.

DR. DEAN LEWIS, Chicago: An ischemic contracture is one of the most serious sequences of a fracture. A thorough understanding of the causes underlying the development of contractures of this type is necessary before a rational therapy can be applied or an improper one avoided. Ischemic contractures follow most often fractures about the elbow and knee, and in the majority of cases the line of fracture passes through the lower end of the humerus or femur. The anatomic relations about these points favor the development of ischemic contractures. The antecubital fossa is covered by a dense fascia, as is also the popliteal fossa. Related to each fossa are large venous trunks which can easily be compressed by a hematoma developing beneath the fascia. The displaced fragment of the fractured bone often lies in such a position that it compresses the main artery of the extremity. Compression by the fragment and pressure of the hematoma beneath the resistant fascia may cause an ischemia or a venous congestion either of which continued long enough will result in muscle degeneration followed by contractures. The subfascial hematoma also interferes with, or prevents the development of a collateral circulation, in those cases in which the main artery is compressed by the fragment. It is undoubtedly true that most cases of ischemic contractures follow the application of constricting bandages, but it should also be remembered that statistics indicate that ischemic contractures follow fractures even when no dressing has been applied. Bardenheuer, who I believe has made the greatest contribution to this subject, has stated that about 8 per cent. of the contractures follow fractures which have had no dressing applied and in which no attempt at reduction has been made. We should remember that a supracondylar fracture unattended to for twenty-four hours may develop contractures in spite of the fact that proper treatment has been applied when seen by the surgeon, and that the damage has already been done, because of the indifference or neglect of the patient. In some cases active means should be resorted to. The fascia covering the antecubital fossa should be incised to remove the hematoma, and the projecting fragment of bone should be replaced to prevent pressure on the main vessel. We are indebted to Dr. Murphy for emphasizing the etiologic rôle of the surgeon in these cases and for outlining so clearly the methods by which this most distressing sequel can be avoided.

MR. HAROLD COLLINSON, Leeds, England: I will, briefly, emphasize what Dr. Lewis has said. I would ask Dr. Murphy whether the ischemic contraction of the forearm was not occasionally merely the result of the extravasation of the blood between the muscular bellies in the upper portion of the forearm. In illustration of this the most striking case of ischemic contracture that I have ever seen was in a small boy who fractured the lower end of his humerus and was under my own care from the very start. He had a great amount of hemorrhage around the elbow-joint and was treated in bed with the arm raised and flexed at an angle of about 120 degrees. He was watched carefully and within twenty-four hours developed ulcers over the tongue and in the index fingers. No splint was ever applied to the arm at any time and in the next month he developed a very marked degree of Volkmann's contracture. Fortunately, it was treated early by massage and movements and he has now a comparatively useful forearm, but it struck me that it was possible in a certain proportion of cases for this condition to arise independent of any treatment. Possibly if some more active treatment had been undertaken in these cases we might have had a better result, but I think not. With regard to the treatment of these late cases it has been my misfortune to have some of these cases, and they are, I am afraid, in my experience, a little more discouraging than they appear to Dr. Murphy. In a case in which the muscular bellies are converted into a hard cicatricial mass, the lengthening of all the tendons of the forearm, which I have undertaken in a certain number of these cases, has been productive of what we call a good result in only a small proportion. It occurs in the late neglected cases that the muscular bellies have lost all power of contraction and while one is able to get the fingers straight with the wrist extended, the amount of use in these fingers, so far as flexion is concerned, is in a certain proportion of cases rather disappointing. I have never undertaken the shortening of the bones of the forearm, but I was hoping that Dr. Murphy when he again talked would be able to tell us of some rather more intelligent treatment than this which I have up to the present undertaken.

DR. JOHN B. MURPHY, Chicago: I mentioned in my paper the three etiologic factors in the production of myositis—the pressure from the splint, the pressure of flexion, and the pressure of the hemorrhage and effusion beneath the aponeurosis in connection with the trauma. The most common cause is pressure from the splint. I have a beautiful case now, from the pathologic point of view, illustrating the point brought out by Mr. Collinson—an arthroplasty in which the patient had a hemorrhage extending down the forearm beneath the fascia, forming a clot there and producing a suspension of muscular contraction within the first eight hours. On examination I found that the blood had passed beneath the aponeurosis and had compressed the muscle. Another matter which was not mentioned in my verbal discussion of the treatment is that when the skin becomes tense, shiny and feels woody, the open incision should be resorted to, and thus free the tension on the blood-clot that is forming and prevent the hemorrhage, necrosis or myositis. This is the proper treatment in this condition, but it must be immediate if good results are to obtain. When there is a large transudate under the muscular aponeurosis, and the tension is severe, subcutaneous division of the aponeurosis is indicated. I thank Dr. Laplace for accentuating the essential factor of the avoidance of trauma in the early or after-management of these fractures. One does not have to fix the bone in its proper position at once; one can wait until the edema and swelling have materially subsided. Above all, however, your morning prayer when treating these cases should include "Deliver me this day from executing passive motion in a recent fracture of the elbow-joint, when that passive motion causes the patient severe pain," as it increases the callous, the connective-tissue formation, the tendency to fixation, and adds to the trauma which is already superlative in that area.

The Ancient Practitioner.—The high esteem in which the physician was held is proved by the beautiful words of Jesus, the son of Sirach (180 B.C.), Ecclesiasticus (R.V.), chapter xxxviii:

"1. Honor a physician according to thy need of him with the honours due unto him:
For verily the Lord hath created him.
2. For from the Most High cometh healing:
And from the King he shall receive a gift.
3. The skill of the physician shall lift up his head:
And in the sight of great men he shall be admired.
4. The Lord created medicines out of the earth;
And a prudent man will have no disgust at them.
5. Was not water made sweet with wood,
That the virtue thereof might be known?
6. And he gave men skill,
That they might be glorified in his marvellous work."
—Neuburger, *History of Medicine.*

THE RODMAN OPERATION FOR BREAST CANCER*

DONALD GUTHRIE, M.D.
SAYRE, PA.

Rodman in 1908 described an operation for the radical treatment of breast cancer which embraces the

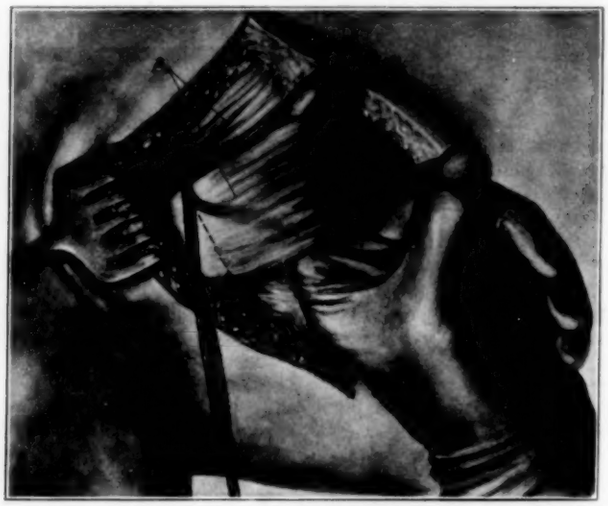


Fig. 1.—*A*, pectoralis major muscle.

good features of the most approved and accepted methods.

In the past three and one-half years, my associate, S. D. Molyneux, and myself, have operated in 117 breast cases. Of this number 79 had the radical

Fig. 2.—*A*, pectoralis major muscle; *B*, acromiothoracic artery; *C*, pectoralis major (clavicular portion); *D*, pectoralis minor muscle; *E*, long thoracic artery.

operation, 77 for carcinoma, 1 for sarcoma, and 1 for tuberculosis, and in 74 instances we used the Rodman operation. This number of cases is far too small, and the length of time since operation too short, to justify any conclusions about results; still we have employed the operation frequently enough to be impressed with the good points, and believe it to be one of the best radical operations.

Rodman emphasizes the importance of a primary axillary dissection, because by working from the axilla instead of toward it the danger of expressing cancer-cells into the adjacent tissues is avoided.

Often it is very important to inspect the extent of axillary involvement before it can be decided whether or not a complete operation is justifiable. The late S. W. Gross called attention to this thirty-five years ago. Judd, in a late paper, points this out, and believes that many advanced cases would not be subjected to the radical operation if the extent of axillary involvement was first determined.

Willy Meyer first practiced and advocated ligating the axillary vessels at their point of origin to lessen the amount of hemorrhage. More blood is lost in any type of operation which attacks the breast first, instead of the axilla, because the same vessels are cut across

Fig. 3.—*A*, pectoralis major muscle; *B*, pectoralis minor; *C*, pectoralis major (clavicular portion); *D*, acromiothoracic artery; *E*, long thoracic artery and vein; *F*, nerve of Bell; *G*, alar thoracic artery and vein; *H*, subscapular artery, vein and nerve.

several times in working toward their points of origin.

Long exposure of a large denuded area of the chest, which occurs in operations that work from sternum to axilla, tends to produce shock. With lessened hemorrhage the time of operation is shortened, and shock is minimized.

Rodman's primary incision is a straight one, beginning one inch below the clavicle, two fingers' breadth from and parallel to the sulcus, between the deltoid and pectoralis major muscles. An incision extending on the arm frequently forms a cicatrix, which limits the range of motion of the arm, and at times causes edema. Our patients have had splendid use of the arm after operation.

The axilla is exposed by severing the tendons of the pectoralis major and minor muscles at their insertions. As a rule, the clavicular portion of the pectoralis major is not removed, unless the growth is in the upper outer quadrant of the breast (Fig. 1). The acromiothoracic and the long thoracic arteries run

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

parallel (above and below, respectively), to the tendon of the pectoralis minor muscle, and should not be injured during this step of the operation (Fig. 2). By cutting the costocoracoid membrane, the space of Morenheim is well exposed.

The dissection of the axilla begins at the apex and extends from above downward and from within outward. As the sheath and fat are removed from the axillary vessels the acromial, long and alar thoracic, and the subscapularis branches of the axillary artery are encountered in the order named (Fig. 3). These, with their accompanying veins, are cut, and the proximal ends ligated. No attempt should be made to remove individual enlarged glands. The contents of the axilla should be removed *en masse*, as a gland-bearing fascia. When this dissection has been completed nothing is left on the inner aspect of the axilla but the posterior thoracic, or nerve of Bell, and posteriorly the long, subscapular nerve.

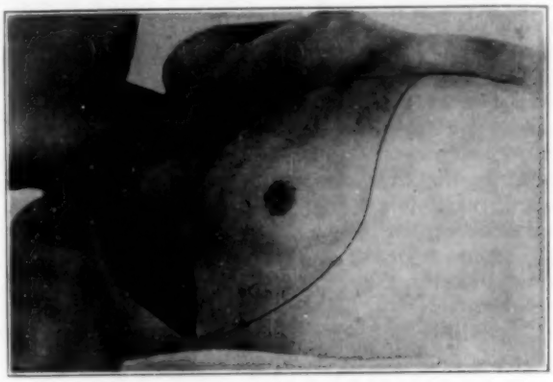


Fig. 4.—Incision for removal of breast.

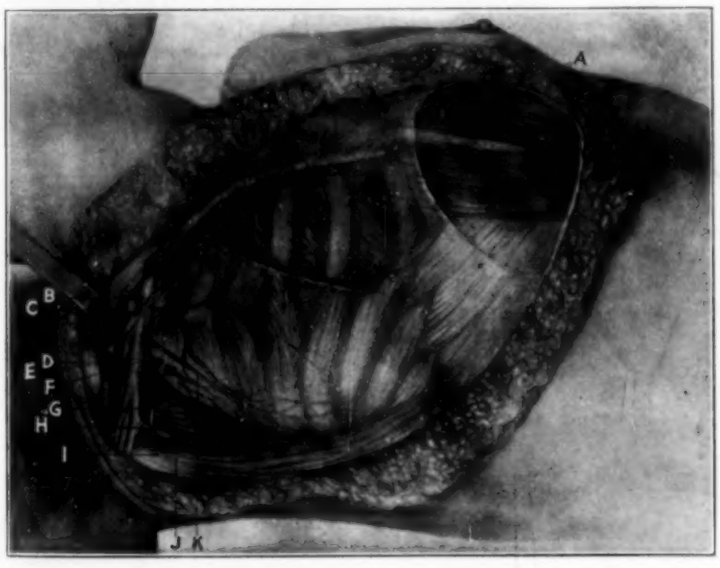


Fig. 5.—*A*, sheath of rectus muscles; *B*, acromiothoracic artery; *C*, long thoracic artery; *D*, pectoralis major (clavicular portion); *E*, axillary vein; *F*, alar thoracic artery; *G*, subscapular muscle; *H*, subscapular artery and vein; *I*, latissimus dorsi muscle; *J*, subscapular nerve; *K*, nerve of Bell.

The breast is removed by an incision beginning at the middle of the primary incision, encircling the breast, and extending downward to a point midway between the ensiform and umbilicus (Fig. 4). The oval should be 5 or 6 inches or more at its greatest breadth, and the incision must never come within 2 inches of the edge of the growth. The subcutaneous tissues are cut on a slant, so that the skin is everywhere undermined for a distance of several inches from the edges of the wound. Rodman and Judd practice free dissection of the superficial and deep fascia, as first advocated by Mr. Hanley, who believes that the peritoneal cavity has been invaded by the permeation of cancer-cells along fascial planes, the rectus particularly.

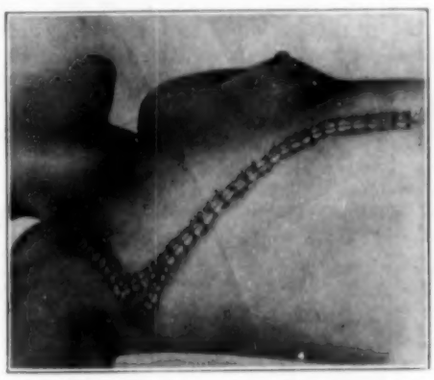


Fig. 6.—Closure of wound.

While a large amount of skin, equidistant in all directions, must be removed, it is rare that skin-grafting ever becomes necessary to close the wound. Judd showed that recurrences in the skin occur more frequently in cases in which a large amount of skin had been removed, but the fascia underneath saved, than when less skin was taken and a very free dissection of the superficial and deep fascias was made. He believes that skin nodules are developed from extension along the lymphatics in the fascia, and not from those in the skin itself, and urges a wide dissection of the superficial and deep fascia, beginning in the axilla, extending down over, and including the pectoral muscles from the sternum outward over the muscles of the back and downward, including the fascia of both recti (Fig. 5).

Rodman advises exploring the supraclavicular glands by a separate incision, if the growth is situated in the upper hemisphere of the breast, or if the axillary glands are badly involved. It is our custom to consider cases inoperable if section of the supraclavicular glands should show cancer involvement, for we believe that internal metastasis has already occurred.

We have a large wound to close; on the chest, the cut ends of the pectoral muscles and the intercostals are exposed, below, the external oblique and recti, posteriorly, the latissimus dorsi, the teres major and subscapularis muscle, and long subscapular nerve, the inner aspect of the axilla, the nerve of Bell, and the digitations of the serratus magnus muscle.

Closure of the wound is begun where it was started, near the clavicle. Closure of the oval is begun at the sternal end. After advancing one-third of the dis-

tance it can be determined if the flaps can be approximated readily. If this is impossible, the axillary portion of the large wound is closed, advancing one-third of the distance. The central one-third, which cannot be approximated, is covered by Thiersch grafts, taken from the thigh (Fig. 6).

We do not employ drainage, except in fleshy persons or when there has been any undue amount of trauma, and we rarely are troubled by serum. Since leaving the sternal ends of the pectoralis major and minor, as advocated by Rodman lately, the flaps adhere readily to the chest wall, and dead space is better obliterated. The arm is released after twenty-four hours, and passive motion and massage begun early (Fig. 7).

I am glad to report that patients with breast tumors are coming to us much earlier for consultation than a few years ago. The percentage of operations for benign tumors has increased very much and we see fewer inoperable cancers of the breast.

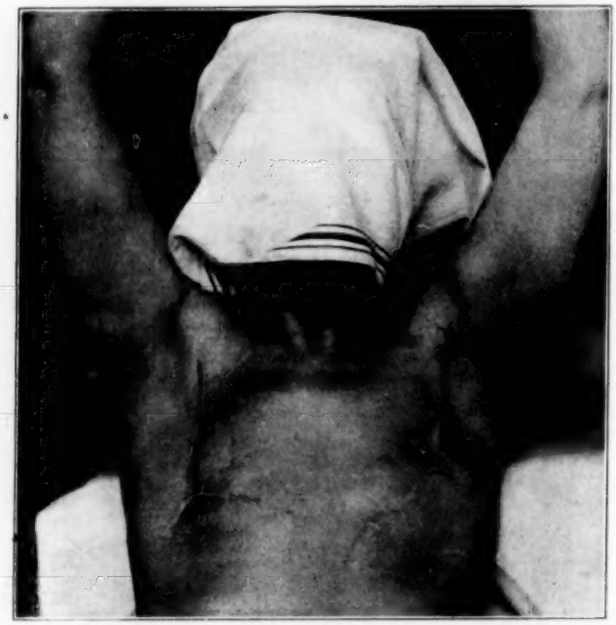


Fig. 7.—Function of arms, after double operation.

CANCER VACCINE AND ANTICANCER GLOBULINS AS AN AID IN THE SURGICAL TREATMENT OF MALIGNANCY*

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During the past six years I have devoted considerable time to the study of specific cancer therapy, and various phases of these investigations have been published from time to time as definite facts of scientific interest were obtained. The work is based on the theory[1] first published in 1910, which states that through altered chemical nature the normal tissue-cell changes into the malignant cell.

If a malignant cell is chemically different in its protein content from a normal tissue-cell it should be possible to sensitize an animal to one protein and not the other. That this is the case has been proved and it has also elicited knowledge concerning a new and extremely interesting form of sensitization to which has been given the term "transitory sensitization."

Formerly I have purposely refrained from mentioning the therapeutic results obtained in these investigations in the belief that at least from three to five years should elapse before any correct judgment could be obtained. Now, however, sufficient time has passed and I believe that the results are of enough value to publish a detailed report. With regard to the therapeutic application of specific therapy I will limit the report to the first one hundred cases. This is done because of the fact that in this group all cases under consideration will be such as have been under observation from at least one to six years. The results obtained since then have been more gratifying and the improvements in technic will be mentioned, but the cases have not been under observation long enough to justify definite conclusions.

The scientific portion of the work is a correlation, for the most part, of work previously published and only reference to this will be given. The theory on which this work has been done is given in "Protein Split Products," Chapter XIV.

In the early part of 1910 I first began the injection of serum obtained from sheep and rabbits, when their large mononuclear count was highest, after sensitization to cancer protein, in cases of human carcinoma and sarcoma. Previously I had employed such serums in mouse carcinoma and, while retrogression and disappearance of many mouse tumors was observed, yet, with the strain in my possession, the number of spontaneous recoveries among controls was so great that conclusive records could not be drawn. It is interesting, however, to note that Abderhalden[2] has recently reported favorably on the use of such a serum in rat sarcoma. His serum was obtained twenty-four hours after the injection of the sensitizing dose, which is the time that the increase in large mononuclear cells is usually highest and his report is a gratifying confirmation of my work.

As stated above and previously published,[3] however, injections of both rabbit- and sheep-serum from animals sensitized were given in twelve inoperable or recurrent cases.

Of these twelve cases eight were given rabbit-serum and four, sheep-serum. Injections of from 1 to 5 c.c. were made every second or third day. Of the cases treated with sheep-serum one became sensitized after three weeks and two others developed an acute nephritis. Of the eight given rabbit-serum, four developed an acute nephritis with blood and albumin in the urine at the end of four weeks. While in all cases there was improvement in the condition of the malignant growth, yet the use of the serum was discontinued, since in over 50 per cent. of the cases in which it was tried, the serum complications rendered it impracticable. While I now realize that the initial doses of

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Vaughan, J. W.: Some Modern Ideas of Cancer, THE JOURNAL A. M. A., May 7, 1910, p. 1510.

2. Abderhalden, E.: Influence on Rat Tumors of Serum Containing Ferments Protecting Against Some of the Tumor Elements, Med. Klin., Berlin, Feb. 9, 1914, p. 183.

3. Vaughan, J. W.: Blood Changes Caused by the Hypodermic Administration of the Cancer Proteid, THE JOURNAL A. M. A., Nov. 16, 1912, p. 1764.

serum were much too small, yet I am fully satisfied from my own experience that a prepared serum as suggested by Abderhalden will never be of practical value in advanced cases, not only because of the danger of the serum as a vehicle for the ferment, but also for other reasons that I will mention later. It is of particular interest to note, however, that, in this series of twelve cases, those in which the kidneys attempted to take care of the foreign serum, developed acute nephritis, while those in which the body cells split up the serum for subsequent elimination became serum sensitized.

If the use of the serum containing the specific ferment is contra-indicated, and I believe that my cases have shown this to be true, the next step was to ascertain whether the specific ferment could be obtained free from the undesirable serum proteins.

For this purpose an attempt was made to remove the ferment from the large mononuclear leukocytes. That this can be done is shown in previously published work[4] and the final product has been given the name of anticancer globulins. It must be understood, however, that even in this form our ferment is in a far from purified state.

It has been customary to test the activity of each batch of globulins by mixing 10 c.c. of a 1 per cent. solution with 5 c.c. of 2 per cent. cancer vaccine, incubating one hour and injecting intravenously into normal rabbits. While this is usually fatal, yet there may be a wide variation in the amount of poison liberated, consequently we have never been able satisfactorily to standardize the ferment.

In the following report of cases the term vaccine will be given to cover the number of injections of both cancer-cell vaccine and cancer residue, while the term ferment will include serum, unfiltered leukocyte extract, filtered leukocyte extract, globulins and in a few cases the leukocytes *in toto*. For the exact meaning of these preparations see "Protein Split Products in Relation to Immunity and Disease," chapter XIV. This grouping under one head is done for the sake of brevity, as a more detailed report would occupy too much space as well as because the active principle under each head is the same.

The method of administration, whether subcutaneous, intravenous, or intraperitoneal will not be designated but the general conclusions of several hundred injections by each method will be considered altogether.

REPORT OF CASES

CASE 1.—Mr. C. Inoperable epithelioma of the palate and cheek. First seen Sept. 2, 1909. Patient received 20 injections of vaccine. Slight temporary improvement following first three injections, followed by steady advance of the disease. Patient died about two months after discontinuing injections.

CASE 2.—Miss B. Epithelioma of arm. First seen Oct. 7, 1909. Patient received 30 injections of vaccine and 15 of ferment. This patient had been previously operated on three times. The epithelioma had progressed until complete absorption of the humerus had taken place for a distance of 6 inches. About one-half of the injections were given before amputation and one-half after. Following the second injection of sensitized leukocytes, which would equal about 90 mg. of globulin, the patient reacted severely. There was loss of consciousness, subnormal temperature and pulse around 140 for three days. During this time the wound cleaned up with marked rapidity and good granulation tissue appeared. After recovery from this severe intoxication caused by liberation of the cancer poison amputation was done. The patient is still alive and without recurrence.

CASE 3.—Mr. D. Recurrent carcinoma of the cheek and lymph-glands. Secondary to lip carcinoma. Seen March 3, 1910. Has received 25 injections of vaccine and 48 of ferment. Patient is living and without recurrence.

CASE 4.—Mr. H. Recurrent epithelioma of ear, following two weeks after radical removal. First seen Oct. 1, 1910. Patient was given 8 injections of residue. Growth disappeared and has not returned to date.

CASE 5.—Mr. W. Recurrent carcinoma of tongue and floor of mouth. First seen Nov. 6, 1910. Patient was given 10 injections of vaccine. No improvement and patient died while under treatment.

CASE 6.—Mrs. F. Recurrent carcinoma of breast. First seen April 7, 1912. Radical removal and second removal of recurrent nodule, had been performed previously. Patient given 10 injections of vaccine and 70 of ferment. Patient still living with recurrence.

CASE 7.—Mrs. C. Recurrent carcinoma of the breast following radical removal. First seen Nov. 28, 1910. Patient given 18 injections of vaccine. Patient still living without recurrence.

CASE 8.—Mrs. E. Endothelioma of eyelid. Slight recurrence following operation two weeks previous. Patient first seen April 9, 1912. Given 2 injections of vaccine and 16 of ferment. Still living without recurrence.

CASE 9.—Mrs. G. Recurrent carcinoma of the breast following radical removal. First seen Nov. 30, 1910. Patient given 34 injections of vaccine and 15 of ferment. Temporary improvement for first six months followed by steady progress of the disease. Patient died from lung metastasis.

CASE 10.—Mr. B. Recurrent breast carinoma following radical removal. Patient given 35 injections of vaccine, 31 of ferment. Patient died while under treatment.

CASE 11.—Mr. S. Recurrent sarcoma of back following operation. First seen Jan. 1, 1911. Recurrence disappeared entirely after six injections of vaccine. Injections were discontinued for three months when there was an axillary gland recurrence. Then given 6 injections of vaccine and 12 of ferment, and axillary removal attempted. Patient died while under treatment.

This last case is of special interest because of the fact that every evidence of tumor disappeared under vaccine injections only again to reappear in more malignant form. During the injections of globulins on three different occasions injections were made directly into the tumor. Each time that this was done, within from one to five minutes the patient would complain of difficult breathing, which was followed by all the symptoms of protein sensitization. This would be followed by a period of rest of from fifteen minutes to one-half hour after which a severe chill would appear and the temperature would rise to 104 or 106. This would last from one to two hours after which the condition would return to normal with the exception that the patient would complain of weakness for three or four days.

These findings are extremely instructive as they show the specificity of the ferment, especially as such symptoms appear only when the injection is made directly into the tumor. As a rule when the ferment is injected subcutaneously there is no reaction on the part of the patient, unless the dosage is extremely large. When the intravenous method is employed there frequently follows a chill about one-half hour after injection, which is followed by a considerable rise in temperature, but never are typical sensitization symptoms observed. A discussion of the respective merits of these various methods of introduction of the ferment will be reserved, however, until the case reports are finished.

4. Vaughan, V. C.: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea and Febiger, 1913, Chap. xiv.

Case 12.—Mrs. B. First seen Dec. 15, 1910. Inoperable carcinoma of the rectum. Colostomy had been performed. Patient given 25 injections of vaccine and 11 of ferment. No improvement. Patient died while under treatment.

Case 13.—Mr. B. Seen Dec. 20, 1910. Inoperable carcinoma of the rectum. Colostomy had been performed. Patient given 16 injections of vaccine. Patient died during treatment.

Case 14.—Mr. C. Recurrent epithelioma of ear one month after operation. First seen April 21, 1912. Patient given 6 injections of vaccine and 6 of ferment. Patient living, condition not known.

Case 15.—Mrs. D. Recurrent sarcoma of head, size of fist. First seen Dec. 23, 1910. Patient had had several injections of Coley's mixed toxins. Given 10 injections of vaccine and 7 of ferment. Patient died three months after discontinuing treatment.

Case 16.—Mr. K. Recurrent carcinoma of glands of neck secondary to lip carcinoma. First seen April 26, 1912. This patient has had incomplete excision of the primary growth and applications of arsenious paste. Patient given 43 injections of vaccine and 154 of ferment. Radium was also used during this time. Patient living but tumor shows progression.

Case 17.—Mrs. P. Recurrent carcinoma of the breast. First seen Jan. 6, 1911. Patient given 9 injections of vaccine. Patient died while under treatment.

Case 18.—Mrs. S. Carcinoma of the stomach with extensive glandular involvement. First seen March 12, 1912. Radical operation performed. Patient given 1 injection of vaccine and 42 of ferment. Patient living and well.

Case 19.—Recurrent carcinoma of the breast. First seen Jan. 20, 1911. Recurrence in opposite breast and possibly liver. Patient given 55 injections of vaccine and 91 of ferment. Patient living, apparently well.

Case 20.—Recurrent carcinoma of the breast. First seen Feb. 1, 1911. Mediastinal recurrence. Patient given 14 injections of vaccine and 4 of ferment. Patient died during treatment.

Case 21.—Mr. M. Small round-celled sarcoma of the leg. First seen Feb. 2, 1911. Amputation performed. Patient given 10 injections of vaccine. Patient living and well.

Case 22.—Mrs. S. First seen March 3, 1911. Recurrent carcinoma of the breast. Patient received 36 injections of vaccine and 24 of ferment. Patient discontinued treatment, not improved.

Case 23.—Mrs. B. Recurrent carcinoma of the breast. First seen July 1, 1911. Patient received 28 injections of vaccine and 21 of ferment. This patient improved rapidly at first. After a large dose of sensitized leukocytes, however, there was a severe reaction with temperature of 106. At the same time the recurrent nodules visible disappeared with rapidity and death resulted five days later. This is a case that evidently liberated so much of the poisonous group during the process of disintegration of malignant cells that its liberation proved fatal.

Case 24.—Mr. E. Recurrent rectal carcinoma. March 11, 1911. Patient received 20 injections of vaccine. All signs of tumor disappeared and he discontinued treatment. This patient was not seen by me again, but I have ascertained that he had recurrence which proved fatal one year later.

Case 25.—Mrs. L. Inoperable uterine carcinoma. March 12, 1911. Patient given 24 injections of vaccine and 8 of ferment. Patient died while under treatment. This case was advanced in type with both rectal and bladder fistulas when first seen.

Case 26.—Mrs. G. Recurrent breast carcinoma. First seen March 25, 1911. Patient given 18 injections of vaccine and 28 of ferment. This is another case in which death was apparently brought about by too rapid liberation of the poison group by a large dose of specific ferment.

Case 27.—Mrs. G. Inoperable carcinoma of the colon. April 27, 1911. Patient given 17 injections of vaccine and 15 of ferment. Case was very advanced when first seen and patient died while under treatment.

Case 28.—Mrs. W. Inoperable carcinoma of the breast. First seen June 6, 1911. Patient given 13 injections of vaccine and 8 of ferment. Patient died two months after discontinuing treatment.

Case 29.—Mrs. B. Multiple sarcomatosis. First seen June 9, 1911. Patient given 13 injections of vaccine, 15 of ferment. Patient died while under treatment, evidently from excessive liberation of cancer protein poison.

Case 30.—Mr. R. Recurrent epithelioma of lip. June 13, 1911. Patient received 6 injections of vaccine. Patient living without recurrence.

Case 31.—Mrs. B. Inoperable carcinoma of the breast. June 17, 1911. Patient given 14 injections of vaccine and 19 of ferment. Slight improvement at first, followed by rapid growth of tumor. Patient died two months after discontinuing treatment.

Case 32.—Mrs. S. Epithelioma of the face. First seen June 20, 1911. Patient given 7 injections of vaccine and 19 of ferment. Patient died while under treatment.

Case 33.—Miss R. Recurrent carcinoma of breast with abdominal metastasis. First seen July 1, 1911. Patient given 23 injections of vaccine and 96 of ferment. Patient discontinued treatment because of severe reaction following the injection of ferment. Condition was improved at this time and the patient is still living with recurrence.

Case 34.—Mrs. P. Inoperable carcinoma of breast with liver metastasis. First seen July 5, 1911. Patient given 21 injections of vaccine and 89 of ferment. Patient died while under treatment.

Case 35.—Miss McA. Carcinoma of breast with axillary involvement. Patient refused operation. First seen July 18, 1911. Was given 25 injections of vaccine and 48 of ferment. All signs of tumor disappeared and patient is still living without recurrence.

Case 36.—Mrs. T. Recurrent carcinoma of the breast. First seen August 23, 1911. Patient given 53 injections of vaccine and 66 of ferment. Patient discontinued treatment as the tumor was apparently not influenced.

Case 37.—Mrs. S. Recurrent epithelioma vulvae. First seen August 17, 1911. Patient received 8 injections of vaccine. Recurrence disappeared and patient is still living without any signs of malignancy.

Case 38.—Mrs. Z. Epithelioma of face. First seen Oct. 21, 1911. Patient received 7 injections of vaccine. Growth disappeared and the patient is still living without recurrence.

Case 39.—Mr. P. Inoperable rectal carcinoma. First seen Sept. 13, 1911. Patient received 10 injections of vaccine and 56 of ferment. Patient died from hemorrhage.

Case 40.—Mr. R. Carcinoma of the lip. Small excision for microscopic section. Refused radical operation. First seen Aug. 18, 1911. Patient given 8 injections of vaccine. Patient living without recurrence.

Case 41.—Mr. M. Epithelioma of the face. First seen Aug. 9, 1911. Patient received 1 injection of vaccine and 3 of ferment. Patient living without recurrence.

Case 42.—Mrs. M. Recurrent carcinoma of uterus. July 27, 1911. Patient given 25 injections of vaccine and 62 of ferment. Patient died while under treatment.

Case 43.—Mr. H. Inoperable carcinoma of the rectum. First seen Sept. 15, 1911. Patient given 10 injections of vaccine and 15 of ferment. This is another case that apparently died from a too excessive liberation of the poison radical.

Case 44.—Mrs. O. Carcinoma of uterus, with involvement of vaginal wall. Panhysterectomy performed, followed by slight vaginal recurrence. First seen Sept. 18, 1911. Patient given 15 injections of vaccine. Patient living without recurrence.

Case 45.—Mr. B. Inoperable carcinoma of the tongue. First seen Sept. 22, 1911. Patient given 15 injections of vaccine and 30 of ferment. Patient died while under treatment.

Case 46.—Mrs. McR. Inoperable carcinoma of uterus. First seen Sept. 27, 1911. Patient received 8 injections of vaccine and 15 of ferment. Patient died while under treatment.

CASE 47.—Mr. L. Recurrent rectal carcinoma. First seen Sept. 28, 1911. Patient received 10 injections of vaccine and 78 of ferment. Treatment discontinued after apparent disappearance of tumor. Present condition not known.

CASE 48.—Mr. C. Inoperable carcinoma of jaw. First seen Sept. 30, 1911. Patient received 12 injections of vaccine and 15 of ferment. Patient died while under treatment.

CASE 49.—Mrs. F. Recurrent carcinoma of breast. First seen Oct. 6, 1911. Patient received 15 injections of vaccine and 6 of ferment, with considerable improvement. Treatment was discontinued in order to try colloidal copper. It has been ascertained that the patient died while under this treatment.

CASE 50.—Mr. S. Inoperable sarcoma of the neck. First seen Oct. 24, 1911. Patient received 14 injections of vaccine and 12 of ferment. Patient died while under treatment.

CASE 51.—Mrs. K. Inoperable carcinoma of stomach. First seen Oct. 31, 1911. Patient received 5 injections of vaccine and 6 of ferment. Patient died while under treatment.

CASE 52.—Mrs. K. Carcinoma of breast. First seen Oct. 31, 1911. As complete removal as possible was performed. The tumor was the size of the patient's two fists with axillary and supraclavicular involvement. Patient received 10 injections of vaccine and 29 of ferment. Patient still living without recurrence.

CASE 53.—Mrs. W. Inoperable carcinoma of the breast. First seen Nov. 3, 1911. Patient received 11 injections of vaccine and 22 of ferment. Patient died while under treatment.

CASE 54.—Mr. P. Carcinoma penis with inguinal involvement. First seen Oct. 5, 1911. Patient received 40 injections of vaccine and 152 of ferment. After 10 injections of vaccine total ablation of external genitals was performed. Patient living without recurrence.

CASE 55.—Mr. S. First seen Nov. 10, 1911. Recurrent sarcoma of the neck. Patient received 13 injections of vaccine and 36 of ferment. Patient died while under treatment.

CASE 56.—Mrs. M. General carcinomatosis following radical removal of carcinoma of breast. First seen Nov. 21, 1911. Patient has received 33 injections of vaccine and 100 of ferment. This patient had metastasis in ileum, vertebra, lungs, inguinal glands and opposite breast, and when first seen was confined to her bed, the slightest movement of which would bring on severe pain. At present the recurrent areas are much diminished. The patient has twice traveled from Michigan to Oregon in comparative comfort, takes daily automobile rides and is much improved.

CASE 57.—Miss C. Recurrent in supraclavicular glands following radical breast removal. First seen March 19, 1912. Patient received 7 injections of vaccine and 66 of ferment. Patient living without recurence.

CASE 58.—Mrs. B. Inoperable uterine carcinoma. Jan. 4, 1912. Patient received 8 injections of vaccine and 33 of ferment. Patient died while under treatment.

CASE 59.—Mr. G. Recurrent sarcoma of leg. First seen Jan. 15, 1912. Recurrence was excised. Patient given 3 injections of vaccine and 9 of ferment. Patient living without recurrence.

CASE 60.—Mrs. M. Recurrent carcinoma of the breast. First seen Jan. 28, 1912. Patient given 6 injections of vaccine and 51 of ferment. This patient died apparently from a too rapid liberation of cancer-protein poison.

CASE 61.—Mr. P. Recurrent carcinoma of cheek. First seen Feb. 7, 1912. Patient received 10 injections of vaccine and 45 of ferment. Patient died while under treatment.

CASE 62.—Mr. T. Inoperable carcinoma of the esophagus. First seen May 8, 1912. On account of inability to swallow either fluids or solids gastrostomy was performed first. Patient given 2 injections of vaccine and 95 of ferment. Patient died while under treatment.

CASE 63.—Dr. B. Recurrent carcinoma of tongue. First seen May 10, 1912. Patient given 2 injections of vaccine and 28 of ferment. Patient living without recurrence.

CASE 64.—Miss G. Carcinoma of the breast. First seen May 13, 1912. Patient given 10 injections of vaccine preliminary to operation. Axillary glands were involved. Subsequently given 17 injections of vaccine and 149 of ferment. Patient living without recurrence.

CASE 65.—Mr. S. Sarcoma of the leg. First seen May 21, 1912. Patient had used Coley's Mixed Toxins, during which time he fell and fractured the leg at the site of tumor. After amputation of leg patient was given 12 injections of ferment. Patient living without recurrence.

CASE 66.—Mr. D. Recurrent carcinoma superior maxilla. First seen June 10, 1912. Patient given 6 injections of vaccine and 40 of ferment. Slight improvement, treatment discontinued because of desire of patient to try something else.

CASE 67.—Mrs. K. Inoperable carcinoma of the uterus. First seen Feb. 4, 1913. Patient given 35 injections of ferment. Patient died from hemorrhage while under treatment.

CASE 68.—Mrs. C. Carcinoma of colon. First seen June 12, 1912. Radical removal had been performed which showed glandular metastasis. Patient given 3 injections of vaccine and 21 of ferment. Patient living without recurrence.

CASE 69.—Mrs. V. Recurrent carcinoma of uterus. First seen June 15, 1912. Patient given 5 injections of vaccine and 60 of ferment. Patient died from acute urinary suppression while under treatment.

CASE 70.—Mr. V. Carcinoma of cheek. First seen May 30, 1913. Patient given 8 injections of vaccine and 17 of ferment. Patient living without recurrence.

CASE 71.—Mr. H. Extensive recurrent carcinoma of jaw. First seen Oct. 25, 1910. Patient given 50 injections of vaccine and 25 of ferment. Patient died while under treatment.

CASE 72.—Mrs. R. Carcinoma of uterus, inoperable. First seen July 16, 1912. Patient given 8 injections of vaccine and 36 of ferment. Patient died while under treatment.

CASE 73.—Mrs. C. Recurrent carcinoma of breast. First seen July 18, 1912. Patient given 5 injections of vaccine and 30 of ferment. Patient died with all the symptoms of protein poisoning.

CASE 74.—Mrs. W. Recurrent carcinoma of breast. Abdominal metastasis. First seen March 1, 1913. Patient given 25 injections of ferment. Patient died while under treatment.

CASE 75.—Mrs. S. Recurrent carcinoma of breast with liver metastasis. First seen Aug. 1, 1912. Patient given 6 injections of vaccine and 25 of ferment. Patient died five months after discontinuing treatment.

CASE 76.—Mrs. N. Recurrent carcinoma of breast. Vertebral metastasis. First seen Aug. 3, 1912. Patient given 10 injections of vaccine and 60 of ferment. Temporary improvement followed by slow progress of the disease. Patient died while under treatment.

CASE 77.—Mrs. J. Carcinoma of stomach, inoperable. First seen Feb. 24, 1913. Patient given 2 injections of ferment. Patient died apparently from rapid liberation of protein poison.

CASE 78.—Mrs. V. Recurrent uterine carcinoma. First seen Aug. 31, 1912. Patient given 21 injections of ferment. Marked temporary improvement followed by rapid progress of the disease. Patient died one month after discontinuing treatment.

CASE 79.—Mrs. P. Carcinoma of the breast. Size of two fists, with axillary involvement. First seen Feb. 24, 1913. Radical removal attempted, following which she received 19 injections of vaccine and 46 of ferment. Patient living without recurrence.

CASE 80.—Miss B. Epithelioma of head involving temporal bone, entire ear gone. First seen Sept. 2, 1912. Patient given 20 injections of vaccine and 85 of ferment. The disease is progressing slowly.

CASE 81.—Mrs. K. Recurrent carcinoma of breast. First seen Sept. 4, 1912. Patient given 19 injections of vaccine and 82 of ferment. Patient died because of rapid progress of the disease.

CASE 82.—Mr. H. Inoperable sarcoma of orbit. First seen Sept. 30, 1912. Patient given 18 injections of ferment. Rapidly growing tumor apparently brought to a standstill.

Treatment discontinued so that patient could go East for operation from which he died.

CASE 83.—Mr. P. Inoperable carcinoma of rectum. First seen Oct. 2, 1912. Colostomy performed. Patient given 36 injections of vaccine and 117 of ferment. The growth has retrogressed and the patient attends to his business. He has gained forty pounds. Is still under treatment.

CASE 84.—Mr. Von J. Inoperable carcinoma of stomach. First seen Nov. 26, 1912. Gastro-enterostomy performed because of obstruction. Patient given 25 injections of ferment. Patient died while under treatment.

CASE 85.—Miss L. Recurrent sarcoma of arm. Inoperable First seen Dec. 5, 1912. Given 4 injections of ferment. Patient died from protein poison.

CASE 86.—Mr. B. Inoperable sarcoma superior maxilla. First seen Feb. 26, 1913. Patient given 4 injections of vaccine and 36 of ferment. Patient died from protein poison.

CASE 87.—Mr. W. Recurrent carcinoma of the rectum. First seen Dec. 7, 1912. Patient given 24 injections of vaccine and 74 of ferment. Condition progressively worse. Treatment discontinued.

CASE 88.—Mrs. B. Recurrent epithelioma of face. Patient had twice been operated on, had been treated with Roentgen ray and radium. First seen Dec. 30, 1912. Patient given 10 injections of residue and 15 of ferment, after which the area was curretted and a skin flap applied which was taken from the neck. Subsequently she has received 17 injections of vaccine and 65 of ferment. Patient living without recurrence.

CASE 89.—Dr. U. Recurrent carcinoma of tongue. Submental glands involved. First seen Feb. 25, 1913. Patient given 32 injections of vaccine and 59 of ferment. Patient living without recurrence.

CASE 90.—Mr. D. Carcinoma of cheek with extensive glandular involvement. First seen Feb. 7, 1913. Patient given 1 preliminary injection of vaccine. Radical removal attempted. Patient given 15 of vaccine and 20 of ferment. Patient living without recurrence.

CASE 91.—Mr. L. Recurrent rectal carcinoma. First seen March 12, 1913. Patient given 15 injections of vaccine and 47 of ferment. After 5 injections of vaccine and 20 of ferment, treatment was discontinued for two months and examination at this time showed recurrence which disappeared on subsequent injections.

CASE 92.—Mrs. G. Sarcoma of neck. First seen March 18, 1913. Previously treated by paste. Excision made. Patient given 3 injections of vaccine and 17 of ferment. Patient living without recurrence.

CASE 93.—Mr. S. Recurrent rectal carcinoma. First seen March 20, 1913. Patient given 27 injections of vaccine and 40 of ferment. Patient living with advancing recurrence.

CASE 94.—Mrs. S. Inoperable carcinoma of tongue. First seen March 20, 1913. Patient given 13 injections of vaccine and 43 of ferment. Patient died while under treatment.

CASE 95.—Mrs. W. Small recurrence of rectal carcinoma. First seen April 11, 1913. Patient given 12 injections of vaccine and 25 of ferment. Patient living without recurrence.

CASE 96.—Miss C. Carcinoma of breast with axillary involvement. First seen June 4, 1913. Radical removal performed. Patient given 29 injections of vaccine and 37 of ferment. Patient living without recurrence.

CASE 97.—Mrs. McD. Recurrent carcinoma of breast. Small nodule. First seen July 9, 1913. Patient given 26 injections of vaccine and 30 of ferment. Patient living without recurrence.

CASE 98.—Mrs. M. Recurrent adenocarcinoma of breast. First seen July 11, 1913. Three recurrent nodules. Patient given 27 injections of vaccine and 39 of ferment. Patient living with slight remaining hardness in one of the recurrent nodules.

CASE 99.—Mrs. S. Inoperable rectal carcinoma. First seen May 8, 1909. Patient given 12 injections of vaccine. Marked temporary improvement followed by rapid progress of the disease. Treatment discontinued.

CASE 100.—Mrs. L. Inoperable uterine carcinoma. First seen Sept. 10, 1912. Patient given 23 injections of vaccine and 72 of ferment. Patient still under treatment with periods in which she is apparently better followed by periods of apparent advancement of the malignant process.

Of the preceding one hundred cases, 50 were inoperable or possessed such a recurrence after former operation as to be classed as inoperable. Of these cases 2 are apparently well and without recurrence, and 4 are markedly improved, which, in this division, would give 4 per cent of apparent recoveries and 8 per cent. the outcome of which is still in doubt.

The cases which showed definite recurrence, which however, was comparatively small in amount, were fourteen in number. Of these 6 are apparently well and 3 improved. There are 5 cases which show small operable lesions in which operation was refused. Of these, 4 are clinically well and 1 improved.

The advanced cases in which operation was performed in combination with specific treatment were thirty-one in number. Of these 23 or 73 per cent. are apparently well. One displayed rapid recurrence and 7 seemed to receive no benefit. All cases except one were microscopically malignant, the one case being that of breast carcinoma in which axillary involvement was present and which refused operative interference.

The study of the blood-counts made in these cases has lead to the conclusion that cases in which the percentage of large mononuclear leukocytes increases to from 10 to 20 per cent. following specific treatment, do well, while those that run a high polymorphonuclear count and in which the percentage of large mononuclear cells is not materially increased are not benefited.

We are accustomed to state that when recurrence does not occur after operation that the removal has been such that all malignant cells have been removed, and that recurrence depends on the incomplete removal of tumor cells. That such is not the case is very easily seen from the clinical course of the disease itself. Almost every malignant process has periods of retrogression or at least of stationary growth, which are in turn followed by more or less rapid progress of the disease. Such observations point to the belief that the body at times forms ferments which are antagonistic to the growth and multiplication of malignant cells, only to lose this ferment when the tumor cells begin to multiply again. That such a transitory ferment is probably present is shown by my animal experiments, by the few undisputed either temporary or apparent recoveries on record as well as by the apparent higher percentage of recoveries obtained when specific therapy is employed.

With regard to the use of either vaccine or residue it should be stated that the field in which they are of service is limited. The best results are obtained in cases in which the amount of tumor tissue present is small, and in which the differential leukocyte count of the patient shows a decided reaction following the administration of the cancer protein. Lunckenbein[5] states that results obtained by the intravenous injection of autolyzed malignant cells in patients suffering from cancer are superior to those obtained by subcutaneous injection and, consequently, he advocates this method of procedure.

From a study of the increase in large mononuclear leukocytes following subcutaneous, intravenous and

5. Lunckenbein: Zur Behandlung Malignev Geschwülste, München. Med. Wchnschr., Jan. 6, 1914, p. 18.

intraperitoneal administration in our animals it is seen that the largest increase occurs after intraperitoneal injection, and during the past year I have used this method almost exclusively, using the intravenous only in cases in which the presence of tumor or adhesions contra-indicated intraperitoneal injections.

From a scientific point of view the higher degree of sensitization attained by this method is a most interesting and important fact since it tends to prove that the degree of sensitization obtained, to the cancer protein at least, is not dependent so much on the amount of protein introduced into the body as it is on the number of body cells that the protein comes in contact with.

When the protein is introduced subcutaneously it comes in contact with but a relatively few body cells; when introduced intravenously the number is probably considerably larger; but when one of the large body cavities is employed the number of cells that the protein comes in contact with must be enormously increased. So far I have used only cancer residue in the peritoneal cavity. I do this for two reasons, first, because as I have shown above the residue contains the sensitizing portion of the protein which is the portion desired, and secondly, I believe that with the poisonous portion removed there will be less local irritation. Thirdly, the residue is soluble in normal saline and consequently in a more divided state than an autolysate or a cell suspension, for which reason it will react more readily and also come in contact with a greater number of body cells.

A vaccine or residue is efficient only in cases which respond with a considerable increase in the percentage of large mononuclear leukocytes, and its chief use should be in operable cases in which a single intraperitoneal dose is given twenty-four hours before operation in order that the blood-stream may have present as a part of its content some specific ferment which can be available for the splitting up of malignant cells not removed and such cells as are cast into the blood or lymph-channels through the operative manipulation.

With regard to the ferment it can best be stated that all cases give evidences of marked benefit from its use during the administration of the first three or four doses, after which the ferment seems to lose its efficiency. The period during which it is active is about ten days, and subsequent injections cause but little reaction. This is easily understood if we stop to consider that the body in all probability forms an antiferment to our specific ferment which renders doses given after the formation of the antiferment inactive. This might be said to be true of any of the specific ferments now employed. As for instance, the first dose of diphtheria antitoxin is generally more efficacious than subsequent injections.

In order to overcome this difficulty a series of cases have been treated by giving from two to five doses of ferment followed by two injections of residue. This has been done because it was thought possible to use up the antiferment formed by the ferment, by the administration of the residue, inasmuch as the chemical relationship between these substances must be very close. Clinically this gives much better results in advanced inoperable cases that do not respond to any method. The dosage of globulins should be from 50 to 100 mg. and the intravenous method of administration is by far the most active.

In conclusion I would state that I do not believe that any method of specific therapy will be of much avail in cases that have large amounts of malignant tissue present. In such cases the use of large amounts of globulins may prove fatal, as in some of those reported in this series when 200 or 300 mg. were given intravenously at a time. The real value of either vaccine or ferment will be in their use in connection with operative removal in order to destroy such cells as are not removed by operation and thus reduce the percentage of recurrent cases.

It is now my practice to give intraperitoneal injection of residue twenty-four hours before operation. If the increase in large mononuclear leukocytes reaches from 15 to 25 immediately before operation, that is deemed sufficient. If this does not occur, then an intravenous injection of 100 mg. of globulins is given following the operation. In all of my cases alternate vaccine and globulin injections have been given frequently for the first six months after operation and then once a month thereafter, as by this means it is possible to see the patient frequently enough so that definite conclusions as to the progress of the case can be drawn.

Washington Arcade.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GUTHRIE AND VAUGHAN

DR. PARKER SYMS, New York: Twenty years ago what is now known as the modern method of operating for cancer of the breast came as a distinct epoch, in the simultaneous publication by Dr. Halstead of Baltimore and Dr. Willy Meyer of New York, of operative procedures independently devised by them. These methods were based on practically the same principles and comprised the removal of the pectoral muscles with the extensive and anatomic dissection of the subclavian, axillary and subaxillary spaces, with the removal of the fat and lymphatics surrounding the breast, *en masse*. I prefer the method of Willy Meyer, because the dissection of the lymphatics and vessels is from the axilla toward the breast. It is against the current instead of with it. The dissection of course is thorough and the hemorrhage, according to this method, is minimized. Since Dr. Meyer published his procedure I have employed it without change, except that I carry the long arm of the incision, anterior to, and above the axilla. If we keep the axilla free from cicatrix, we will have the arm absolutely unlimited so far as motion is concerned. We have learned much since this epoch of modern breast surgery concerning the method and manner of dissemination and radiation of cancer. Handley's theories as to permeation of cancer cells have taken a great hold. Probably the most important work in this field was that of Harold Stiles. He demonstrated the fact that widespread undermining and dissection of the lymphatic-bearing fascia is quite as important as widespread dissection of the skin; neither is to be neglected and neither is neglected in the Rodman operation. One subject presents itself in a new light. Bloodgood has pointed out that cancer is coming to the surgeon almost as a new problem. Cases are brought to him earlier. We must determine how to treat, not only cancer, but the precancerous conditions. Most prominent among these is chronic cystic mastitis. We know that this disease results in cancer in a large percentage of cases. We are learning that the cancerous change is a matter of stage. That the evolution of chronic cystic mastitis into cancer is simply a progression; if the process is carried far enough it will definitely result in cancer. What are we to do in these cases? As yet we have no clinical evidence of the transition into cancer. If we treat these cases as embryo cancers, employing the radical operation, we shall be performing a mutilating operation unnecessary in many instances. So

far as the prevention and cure of cancer is concerned, however, we may be successful in 100 per cent. of these cases.

Dr. William L. Rodman, Philadelphia: The method to which Dr. Guthrie is pleased to give my name is a composite procedure, all the steps not original with myself, but it is an operation which I carefully worked out on the cadaver after many years experience in cancer of the breast. I wanted to accomplish certain ends and to avoid certain embarrassments which had resulted in failure in my previous experience. I feel that I have simply brought together the good points of Halstead, Meyer, S. W. Gross, Stiles and Handley. I have kept accurate records of my private patients, every one operated on during the last sixteen years, but not of the ward patients, as it is practically impossible to follow them up. The functional result of the operation is absolutely good. The unfortunate results that I formerly had when I used skin grafting was due to the arm sticking up at a right angle, preventing movements as in dressing the hair or similar procedures. At present the patients can do anything that they could do before. As Dr. Guthrie says, the chief advantage is that the lymphatics are blocked at the axilla first and next at the epigastric triangle. Handley demonstrated that there are more metastases to the liver than anywhere else. Therefore attention must be paid to this. He showed also that the cancer cells permeate along the lines of least resistance, around the umbilicus, along the round ligament and the liver. The important thing is not to manipulate the breast at all during the operation. The last step is removal of the breast after blocking. The small amount of hemorrhage is an advantage. As to ultimate results we all know that Volkmann's original teaching of a two-year limit for non-recurrence was absolutely wrong; we further know that three years to insure a cure is also wrong, yet the three-year limit is generally accepted. I imagine that after five years the patient should be given a reasonable assurance. According to Ransohoff if the patient lives three years there is a 90 per cent. chance of non-recurrence. So that the three-year limit is a pretty good one to follow. Of the private patients that I operated on in the last fifteen years (three cases of carcinomatous mastitis should be excluded), thirteen or 28 per cent. are dead; one case was inoperable and the patient is counted as dead; 72 per cent. are living considerably more than three years after operation.

Dr. Joseph Bloodgood, Baltimore: I am impressed that if the surgeon does a radical operation, a dissection *en bloc*, if possible, and tries to push out of his mind the idea of a closure of the wound, the individual results will be best. I have been brought up with the idea of a wide skin incision and skin grafting, but I have found that when a poorly trained operator makes this broad area of denuded skin he may be so impressed with its extent that his hand may be stayed in the subcutaneous dissection. Dr. Halstead did not mention the subcutaneous dissection in his earlier publications, but in my experience, and I was with him almost from the beginning, he never failed to do it, and the wide subcutaneous dissection of fat and fascia are the essential features in the operation for cancer anywhere. There should be no dispute with regard to the long incision. That incision allows wider subcutaneous dissection upward. Therefore it is necessary for the region downward, but also allows flaps that come together with less tension. To some surgeons who operate for cancer of the breast, important as the axillary dissection is, the chest-wall dissection is more important. The new and more difficult problem which is presenting itself to us to-day is not the dissection *en bloc*, not the wider dissection, not the good function of the arm, but the exploratory diagnosis of those lumps in the breast in a woman over 25 which we cannot diagnose clinically. Out of 210 cases in twenty-five years, in which the lump was removed, one woman has come back with cancer two and a half years after, showing that we were then justified in the non-mutilating operation. If, at the exploration, malignancy is determined, a complete operation follows at once. In our cases of adenocarcinoma every patient is well five years after operation with not a single recurrence up to date. In adenocarcinoma the proper diagnosis and exploratory incision gives 100 per cent. of good results. If the proper diagnosis is not made the percentage drops under 20, showing the result of the incomplete operation. In the more malignant forms of cancer, which are 75 per cent. of all, in our exploratory incisions the worst results are 85 per cent. Therefore one may see the greater responsibility of the surgeon who operates on an apparently innocent lump in the breast as compared to the surgeon who operates on a clinically malignant cancer of the breast.

Dr. William B. Coley, New York: There is no doubt that there is a growing interest in the treatment of cancer on biologic principles, and that any great advance in cancer therapy must come along these lines, an opinion which was strongly expressed by Mansell Moullin a year ago in his Bradshaw lecture on the biology of tumors. The two principal types of vaccine therapy that have been studied are active and passive immunization. Both methods have been extensively tested under the Huntington Cancer Research Fund of the General Memorial Hospital during the past three years by Drs. Beebe, Berkeley and Weil. The latter has made a critical review of the whole subject and while his paper has not yet been published, he kindly permits me to quote from it. He states that passive immunization, which consists in injecting cancer tissues into an animal, rests on two fundamental assumptions, the correctness of which has not yet been fully proved. The assumptions are: (1) That it is possible by the injection of cancer tissue to produce specific, immune cytolytic bodies which have the power to destroy the cancer cells; (2) that it is possible by this immune serum to destroy cancer cells in the body tissues of the patient. Active immunization, he states, rests on two similar assumptions, both fundamental, only one of which has been proved: (1) That the animal body can produce antibodies against its own tissues. (2) That these antibodies are effective in the body of the producer against its own antigenic cells. Dr. Weil states that the experimental studies as to the applicability of serum therapy, have failed absolutely to vindicate it in animals.

With regard to vaccine therapy in the human being, next to Vaughan's exhaustive paper is that of Vidal brought out three years ago at the International Congress of Cancer Research in Paris. Vidal has been working on the subject since 1905. He describes ninety-four cases, six of which he regards as cured, nineteen benefited. The patients were well from three to ten years. Vidal's method consisted in the injection of cancer material which had been saturated with a dog's antitumor serum before injection. Further, each injection was preceded by the injection of nucleic acid to produce a leukocytosis. Odier of Paris read a paper a year ago before the congress at Brussels in which he reported two remarkable results from passive immunization. Dr. Vaughan's results are certainly the most hopeful of any so far obtained from the use of any type of vaccine derived from the cancer cell. As to active immunization Dr. Weil holds that the entire literature does not show a convincing case except that observed by Stauler of Dr. Kümmell's clinic (Hamburg) in which a carcinoma of the uterus disappeared and the patient remained well for six months.

Dr. M. M. Lucid, Cortland, N. Y.: Residing as I do in a city in central New York, for which the statistics of the state show the third highest mortality for cancer, it was with interest that I assisted in ascertaining the reason. The fact that the majority of cases of cancer of the breast which passed through our hands were late cases, solved the problem. That early diagnosis and radical removal with a good sharp knife in good light speaks for low mortality there can be no doubt, and the bloodless operation by tying off the vessels first from above is the operation of choice. Crile's method of axillary dissection is most commendable and insures, if possible, against recurrence. In my experience untreated cancer of the breast will almost invariably result in the death of the patient within three years. The percentage of patients that go beyond that period is so small

that it may be disregarded. That the disease is primarily, local, and therefore amenable to early and radical surgical removal, is a fact beyond dispute. Although the results shown by different surgeons vary, the highest percentage of cures is attained by those surgeons who do the complete operation as described in the Rodman procedure, which should serve as an argument in favor of the extensive removal of all tissue which can possibly be diseased. At present surgery is the only branch of medicine that can rightly hold out any hope of cure for cancer of the breast, therefore early and complete removal by the knife is the accepted and only weapon of defense by surgeons of national reputation against this disease. The early operation should be insisted on before axillary involvement, which will save four out of five. It is the incomplete operation that may properly be styled the forerunner of recurrence. The dangerous significance of the cancer problem is a subject which rarely reaches the attention of the lay mind and is only appreciated by comparatively few physicians. It is therefore of the utmost importance that every member of the medical profession carry the message to his clientèle that they may know what may be expected and what has been accomplished by surgery in curing this most common disease, especially the radical removal of breast tumors in the precancerous stage.

DR. HENRY S. WIEDER, Philadelphia: Dr. Bloodgood has, in my opinion, sounded the true keynote in the discussion of carcinoma of the breast. I think, however, that he has not gone quite far enough. He speaks especially of the small lumps found in the breasts of women over 25 and calls special attention to the necessity of diagnosis at the time of the exploratory incision. Unfortunately, as he states, a great many surgeons without previous thorough pathologic training are not capable of making a diagnosis in the more obscure cases. In addition there are still other cases which I believe defy the most capable pathologist or surgeon to make a diagnosis by simple incision without frozen section. Suspicions may be aroused as to the true condition but in some of these cases it is impossible to make an accurate diagnosis with the naked eye. I recall three cases which looked grossly like simple, benign, abnormal involution, but which, on careful gross-sectioning and examination of the most suspicious portion by frozen section, proved to be carcinoma in its incipient stage. These cases undoubtedly would have been overlooked if examined by gross-section only. Only once have I found this process to fail to reveal incipient carcinoma, as shown by a little deeper paraffin section on identically the same block of tissue as used for frozen section. In this case also a few more sections would have revealed its true nature. It was the earliest case of carcinoma of the breast I have ever seen. I therefore wish again to emphasize that in operative work on the breast, whenever possible, the surgeon should have a trained pathologist as assistant and have frozen sections made at the time of the operation.

DR. JULIUS H. JACOBSON, Toledo, O.: I believe that we can do just as complete work with such standard operations as the Kocher, Halstead and Willy Meyer operations as with the operation devised by Rodman. There is, however, one important point in favor of the Rodman operation which should decide us in our choice of methods, and that is the question of postoperative lymphedema of the arm. Dr. Rodman has stated that he observed a slight lymphedema of the arm in only one case out of the 150 operations which he has performed. In all other operations in which the incision extends over the insertion of the pectoral muscles on to the arm, postoperative lymphedema is not infrequent. I know of no complication following the radical operation for cancer of the breast which is more distressing and before which we are more hopeless. I have performed Handley's operation for the relief of this condition but without result. The operation which practically gives us no postoperative lymphedema, in my opinion, is the one we should adopt. Dr. Bloodgood has given us the keynote to the entire situation, namely, the early diagnosis of cancer of the breast. The recent advances in the production of local anesthesia, especially with the use of Braun's technic of conduction anesthesia have given us a simple method whereby we can remove all suspicious growths of the breast and subject them to an immediate microscopic examination with the freezing microtome. In this manner we can arrive at an early diagnosis, relieving the minds of both patient and physician regarding the presence or absence of malignancy. Such cases can be taken into the hospital, the growth removed and examined, and if the condition should prove to be benign, they can leave the hospital in about two hours from the time of entry. It has been my experience that patients consent more readily to the removal of suspicious growths of the breast, when they are informed that it can be done in this manner. The method seems to me to be the best in dealing with precancerous conditions of the breast and to meet logically and squarely the problem as we see it in practical surgery to-day.

DR. DONALD GUTHRIE, Sayre, Pa.: In reply to Dr. Jacobson's question about the frequency of edema of the arm following operation, there is only one patient who showed it. The operation was done against our better judgment. The extent of Roentgen-ray involvement was sufficient to contraindicate a radical operation. There is one point I did not mention. Dr. Wainwright of Scranton gives his patients a thorough roentgenization before the flaps are closed, the idea being to destroy any cancer cells expressed from the breast. We roentgenize our patients immediately after the operation is completed and urge them to come back for treatments for at least a year afterward. With regard to the skin flap we employ a wide incision 5 or 6, or more inches at its greatest width. Since we have learned to undermine the tissues by cutting them on a slant we can close large wounds which formerly had to be skin grafted.

DR. J. W. VAUGHAN, Detroit: First, I will answer Dr. Coley's remark with reference to Dr. Weil's failure to find any specific ferment. Dr. Weil stated, at the cancer association in Washington one year ago, that it was impossible to sensitize animals to cancer protein. The reason he could not find it was that he did not look for it at the right time. He looked for it several days afterward as in ordinary sensitization. It is present twenty-four hours afterward and it disappears six hours later. Abderhalden's work mentioned in the paper corroborates this work. With regard to injections and treatment by vaccines, the results are not good, but they are better than they were. Why? Before they were given by guess work. Now they are governed by the increase in mononuclear cells. What practical value has this on the subject of when to operate in cancer? Every surgeon has operated on a little adenocarcinoma no larger than your thumbnail to find that within six months the patient has general carcinomatosis. The next may be a patient with a great big adenocarcinoma; the surgeon will operate with fear and feel sure it will recur in a few months. Why does it not recur? Because it has been operated on at the time that the blood-stream contains this specific ferment. The thing to do is to produce this specific ferment in the blood-stream before operationg and then recurrences will be fewer.

Infant Mortality.—One speaks of armies being "decimated" by war; of a people being "decimated" by a pestilence, and at such conditions remains aghast at the tragedies of human existence. Yet the universe looks on unmoved at a decimation or slaughter which has been in our midst for untold generations. Under the very best conditions this destructive process amounts to simple decimation; at the worst, not merely simple but to double, triple and even quadruple decimation. This form of decimation is infant mortality, which until recent years has practically passed unnoticed. . . . A new-born child has less chance of living a week than a man of ninety, and of living a year than a man of 80. Over 3,200,000 infants less than a year old perish annually in the countries forming the civilized world, or, in other words, one infant dies in every ten seconds, every hour of the twenty-four.—Alan Brown and George Campbell, *Canadian Med. Assn. Jour.*

THE ASSOCIATION OF ERYTHEMA NODOSUM AND TUBERCULOSIS*

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During the past few years numerous instances have been recorded by French and German observers of the association of erythema nodosum with tuberculosis, especially in childhood. It appears that in many instances an attack of erythema nodosum has been followed directly or within a short period by the development of an active tuberculous process in the lymph-glands, meninges, pleura or other structures. As long ago as 1872, Uffelmann[1] called attention to the grave significance frequently attached to erythema nodosum occurring in children of tuberculous ancestry, but not until recently has the subject again come into prominence.

The question of the etiology of erythema nodosum still awaits solution, and the views held by different writers vary widely. Regardless of whether we look on erythema nodosum as a distinct disease due to a specific micro-organism, as the cutaneous expression of a systemic disorder due to the ingestion of drugs or the absorption of toxins or as a symptom in the course of other diseases, as syphilis or tuberculosis, the large and increasing number of observations of its association with tuberculosis deserve attention.

A review of the recent literature shows that the writers are by no means in accord as to the etiologic significance of their observations. Many express themselves as convinced of the tuberculous nature of all their cases of erythema nodosum, as opposed to those who do not look on erythema nodosum as of uniform etiology and as tuberculous in only a small percentage of cases, while others deny any relationship whatever to tuberculosis.

On the basis of the tuberculin test (von Pirquet) applied in forty-eight cases of erythema nodosum in children from 2 to 13 years of age, all of whom gave an intense positive reaction, Pollak[2] states that the disease occurs in childhood exclusively in individuals infected with tuberculosis, and is in all probability a tuberculous dermatosis. Three of these children later developed an active tuberculosis in the cervical lymph-glands, meninges and pleura, while several had a history of antecedent tuberculosis of glands and bone. Five attempts at experimental inoculation (with blood and an excised nodule from two cases, and a nodule alone from another) gave a negative result.

The conclusions of Pollak are sharply criticized by Moro,[3] who had four negative tuberculin reactions in thirty patients. He also failed in three cases to obtain a local reaction in the lesions of erythema nodosum by subcutaneous injections of tuberculin (from 0.2 to 2 mg.), and points out that the occurrence of erythema nodosum it not even necessarily dependent on the presence of a tuberculous allergy of the tissues.

Brian[4] made a thorough bacteriologic and experimental study of ten cases of erythema nodosum to determine their possible connection with tuberculosis. Seven of eight cases examined gave a positive reaction to tuberculin (von Pirquet and subcutaneous). By subcutaneous injection of blood from one patient, a woman of 29, without clinical evidences of tuberculosis, Brian succeeded in producing tuberculosis of the inguinal glands in two of three guinea-pigs inoculated. Similar attempts in nine other cases were negative. An acid-fast bacillus was demonstrated by means of sedimentation with acetic acid and antiformin in the blood of the majority of the patients, but Brian does not consider these as tubercle bacilli, and is unwilling to express an opinion as to their significance. Cultures with blood and synovial fluid remained sterile, and inoculation of rabbits with blood and synovial fluid was without effect, and did not produce arthritis or affections of the serous membranes. As a result of his work Brian concludes that tuberculosis is certainly not the only cause of erythema nodosum, and probably enters into the etiology of only a small number of the cases, and this is also true of rheumatic polyarthritis.

Hildebrandt[5] relates the case of a woman of 24 years, with a history of tuberculous infection in childhood, who developed the lesions of erythema nodosum ten days after an acute angina and stomatitis. With 1 c.c. of blood drawn when the eruption was at its height, he succeeded in producing tuberculosis in two guinea-pigs by intraperitoneal injection. The tubercle bacilli were found to be of human type. As the eruption disappeared a bilateral pleurisy and pericarditis developed, which from their course and in connection with an infiltration of one apex and tuberculous glands in the neck, were certainly tuberculous. Hildebrandt believes in the tuberculous origin of some cases of erythema nodosum, though the final proof is still lacking.

Kober[6] is of the opinion that erythema nodosum in children with a family history of tuberculosis is an early symptom of infection with tuberculosis, and considers prophylactic measures as necessary. He cites the history of a girl, aged 6, with erythema nodosum preceded for fourteen days by febrile attacks, prostration and joint swellings, with positive von Pirquet reaction, and later enlarged glands at the hilus, as shown by Roentgen examination.

Jadassohn[7] has recently expressed the opinion that renewed study of the relationship of erythema multiforme, purpura and above all of erythema nodosum to tuberculosis is necessary. All three conditions must necessarily be regarded either as of complex etiology, or, in addition to the idiopathic disorders of unknown but possibly specific infectious etiology, we must recognize the existence of symptomatic or secondary affections which closely resemble or imitate the idiopathic form. Tuberculotoxins or tubercle bacilli can readily be assumed as causative for some of the secondary or symptomatic forms.

Among the French observers are many who consider the tuberculous etiology of erythema nodosum as proved. Landouzy[8] maintains that the septicemias due to the bacillus of Koch have a varying symptomatology in accordance with their form, intensity and evolution. The type with a more or less latent symptomatology develops pulmonary, pleural, cutaneous, periosteal, articular, endocardial and pericardial affections, and

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Uffelmann: Deutsch. Arch. f. klin. Med., 1872, x, 454; ibid., 1876, xviii, 313.
2. Pollak: Wien. klin. Wchnschr., 1912, xxv, 1223.
3. Moro: München. med. Wchnschr., 1913, lx, 1142.
4. Brian: Deutsch. Arch. f. klin. Med., 1911, civ, 272.
5. Hildebrandt: München. med. Wchnschr., 1907, p. 310.
6. Kober: Med. Klin., 1912, p. 781.
7. Jadassohn: XI Kongress der deutschen dermatologischen Gesellschaft, September, 1913.
8. Landouzy: Gaz. d. hôp., 1913, lxxxvi, 2098; Presse méd., 1913, p. 941.

among these erythema nodosum is the principal manifestation.

His belief that in the majority of instances erythema nodosum is a septicemia due to the tubercle bacillus is shared by Aubert,[9] Alamartine[10] and Leriche,[11] while Courmont[12] and Pic[13] state their belief in the tuberculous nature of some though not all of the cases.

Landouzy is the only one who has thus far succeeded in finding the tubercle bacillus in the lesions of erythema nodosum.

The histology of a lesion excised from the forearm of a woman aged 27, with arthralgias, probable endocarditis, typical erythema nodosum and suspected pulmonary tuberculosis was negative as to tuberculous structure, but a typical tubercle bacillus was found imprisoned in a coagulum in the lumen of a vessel. A guinea-pig was inoculated subcutaneously with a nodule from the same patient, and when killed seventy days later numerous tubercle bacilli were found at the site of inoculation, with tuberculous changes in the spleen, liver and lungs.

Aubert reports four cases of erythema nodosum in patients aged 17, 10, 3 and 10 years, all with positive ophthalmo-reaction, and symptoms of profound systemic disturbance. From four to six months later three developed tuberculous processes in the lungs and mediastinum, and two died within one year, while the fourth patient is undergoing an antituberculous regimen.

Courmont's six patients were adults, from 16 to 37 years of age, with positive response to the serodiagnostic test of d'Arloing and Courmont, and other indications of tuberculous infection (pleurisy, hydrarthrosis).

Sezary[14] states that tuberculous meningitis is a common sequel of erythema nodosum. He records the case of a girl, aged 8, who developed tuberculous meningitis four months after a short attack of erythema nodosum, at which time there was rough breathing at the apices and tracheobronchial adenopathy.

Kuhn[15] studied twenty-two cases of erythema nodosum in children and obtained a history of tuberculosis in eight. One of his patients developed tuberculous meningitis six weeks after erythema nodosum and another a tuberculous pleurisy after three months, but Kuhn considers the association of the two diseases as a coincidence.

Dunlop[16] records tuberculous meningitis in a boy of 8, with a family history of tuberculosis, developing fourteen days after an attack of erythema nodosum.

Abt[17] has observed tuberculous meningitis in a child 5½ years old, following immediately on the subsidence of erythema nodosum, and suggests that erythema nodosum, like other infectious diseases, may act by preparing the soil for tuberculous infections, particularly the miliary type.

Meara and Goodridge[18] have recently recorded a case in which directly after the subsidence of a mixed eruption of erythema multiforme and erythema nodosum in a woman of 25, without a history of tuberculosis, a fulminant tuberculous meningitis developed, and at necropsy there was found tuberculosis of the cervical and mediastinal glands, lungs and meninges.

As a further contribution to this subject I desire to relate briefly the case histories of two patients who came under my observation:

CASE 1.—In a girl, aged 13, with a negative personal and family history, on the fifteenth day after the subsidence of an attack of measles, there appeared a profuse nodose eruption over both tibiae. This was preceded during two days by fever, pain in the right shoulder and swelling in the left cervical region, without sore throat. During the next three days the eruption also appeared about the knees and on the extensor surface of both arms and forearms. The nodes were all highly inflammatory, tense and tender to the touch, and measured from 1 to 2 inches in their longest axis. Within ten days the eruption had entirely disappeared. The cervical adenitis increased during several days, was stationary for two weeks and then gradually subsided. An evening rise of temperature persisted for several weeks, and the patient gradually regained her former strength. Permission for a tuberculin test was not granted, but the clinical features of the adenitis left no doubt of its tuberculous nature.

CASE 2.—Girl, aged 4, sister of the preceding patient, also had measles at the same time as her sister, following which a bilateral cervical adenitis developed, with continuously high temperature for ten weeks. Several small tender nodes appeared on the legs and arms sixteen days after the eruption of measles had vanished, and subsided within a few days. These were followed within one week by a discrete papular eruption which appeared first about the mouth and on the hands. New lesions continued to develop during the next fourteen days and were most plentiful on the hands, forearms, feet and legs. The eruption consisted of scattered papules of pinhead size and slightly larger, without areolae, on the summits of which tiny vesicles rapidly formed and soon dried into adherent, depressed crusts, leaving a barely perceptible scar. The diagnosis of tuberculid was made. A von Pirquet test gave a moderately developed positive reaction. During this period the patient was irritable, complained of sore throat, and of pain in the tumefied cervical glands. The temperature varied between 102.5 and 104. After four weeks symptoms of tuberculous meningitis appeared and death occurred three weeks later.

From a study of the case reports now available in the literature it appears reasonable to regard the close association of erythema nodosum with tuberculosis in these cases as more than accidental. If we look on erythema nodosum as an infectious disease due to a specific micro-organism we can adopt the suggestion of Abt, that, like other infectious disease as measles and pertussis, it may act by preparing the soil for tuberculous infections. It has not yet been definitely established, however, that erythema nodosum has a specific cause, while there is experimental evidence to show that in some cases tubercle bacilli were present in the blood at the time of the eruption, and in the lesions themselves. This would establish the tuberculous etiology of some cases of erythema nodosum, which can then be classed as symptomatic, along with the nodose lesions occurring in syphilis, gonorrhea, scarlet fever and typhoid fever.

Furthermore, erythema nodosum occurring in young children with a family or personal history of tuberculosis should be regarded with suspicion and as perhaps indicative of the change of a latent or unsuspected focus of tuberculosis into an actively advancing process.

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10. Alamartine: Gaz. d. hôp., 1912, lxxxv, 1027.
11. Leriche: Gaz. d. hôp., 1913, lxxxvi, 2221.
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14. Sezary: Gaz. d. hôp., 1912, lxxxv, 125; Med. Press and Circ., 1912, xciv, 32.
15. Kuhn: Arch. f. Kinderheilk., 1903, xxxvi, 195.
16. Dunlop: Brit. Med. Jour., 1912, ii, 120.
17. Abt, I. A.: Erythema Nodosum, THE JOURNAL A. M. A., Nov. 12, 1904, p. 1454.
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ABSTRACT OF DISCUSSION

Dr. Fred Wise, New York: While the theory of the tuberculous origin of erythema nodosum is very interesting, it is scarcely in accord with the short duration and practically spontaneous disappearance of the lesions in some of these cases. Lesions which are caused by the presence or activity of the tubercle bacillus in the tissues are almost invariably chronic and persistent in nature. How, then, should we reconcile the presence of tubercle bacilli in the lesions of erythema nodosum, when they are so evanescent in character?

Dr. Ernest L. McEwen, Chicago: Dr. E. C. Rosenow of Chicago has recently succeeded in isolating an organism from the lesions of erythema nodosum in a number of cases. In one of these, of which I have personal knowledge, the patient was a young, foreign-born woman with indefinite joint-pains; in the lesions of the legs Dr. Rosenow was able to find this particular organism and to show its close relationship to the streptococcus which he has demonstrated to be the cause of articular rheumatism. If Rosenow is on the right track these cases of erythema nodosum associated with tuberculosis must be explained as Dr. Foerster has suggested, namely, that some acute infectious disease, like measles, lights up a latent tuberculosis, while coincidentally an infection with Rosenow's organism occurs. It is quite remarkable that so many cases of erythema nodosum associated with tuberculosis are reported in the literature. We have reason to expect that the future will reveal to us some wonderful things in connection with the transmutation of organisms. We know that certain strains of organisms will select certain tissues and leave others alone, a fact which is as important as it is striking. Rosenow, I understand, has been able to change his streptococcus of rheumatism, through a series of definite stages, into a pneumococcus, and back again, by animal inoculations under certain conditions. This field of research, I believe, will prove to be an extremely rich one in the near future.

Dr. George M. MacKee, New York: I believe, with Dr. McEwen, that Rosenow is on the right track. I also feel as does Dr. Wise with regard to the short duration and spontaneous recovery of erythema nodosum lesions, and I cannot conceive of a tuberculous process of so brief a duration. In erythema nodosum we have lesions that last only a few days, and it is almost inconceivable that they should be due to the toxins of tuberculosis.

Dr. W. C. Brownson, Asheville, N. C.: With regard to the value of the von Pirquet test from a diagnostic point of view, the pediatrists have come to the conclusion that it is of doubtful value except in very young children. Still we constantly read of the von Pirquet test as an aid in the diagnosis of tuberculosis verrucosa cutis or blastomycosis. As a matter of fact, the test is of little value except in young children.

Dr. J. B. Kessler, Iowa City, Iowa: This discussion reminds me of a patient I had last winter who was suffering from erythema nodosum. The case had been regarded as one of lues until that diagnosis had been disproved by several negative Wassermann tests. The paper of Dr. Foerster and the work of Dr. Rosenow certainly show us the way to make a correct diagnosis in these cases.

Dr. A. Ravogli, Cincinnati: I am not inclined to believe that erythema nodosum has any relationship to tuberculosis. I have seen only a few cases of this affection, usually occurring in young girls, ranging in age from 12 to 19, and giving a history of some acute antecedent disease, usually a sore throat together with arthritic pains. The attacks were of brief duration, the eruption being usually confined to the lower extremities, in the form of hard, oval, red erythematous nodules, which disappeared in a short time, leaving the patient in an apparently normal condition. For these eruptions I think Rosenow has given us a very good explanation, namely, that the staphylococcus or some hybrid form of streptococcus from the tonsils enters the circulation and when it reaches the small ramification of the capillary blood-vessels, produces a kind of thrombi which causes exudation and the erythematous eruption. Bazin's disease, erythema induratum, I have always regarded as a localized tuberculosis, as it often ends in ulcerations.

Dr. Richard L. Sutton, Kansas City, Mo.: I have recently done some work in connection with sarcoids (Boeck and Spiegler-Fendt), erythema nodosum and the erythema induratum of Bazin. Beginning with nodular tuberculosis of the hypoderm (Wende), we can readily separate the various types of lesions into definite clinical groups. There are undoubtedly three distinct varieties of "erythema nodosum," and perhaps four: erythema nodosum directly due to bacteria (Rosenow), erythema nodosum due to the tubercle bacillus or its products, and erythema nodosum occurring as a result of the ingestion of certain foods or drugs. The tuberculous type of erythema nodosum I think should be designated as "erythema indurata disseminata," to distinguish it from the other varieties.

Dr. O. H. Foerster, Milwaukee: I wish to emphasize that many of the cases reported in the literature have been in children in whom the erythema nodosum has been followed by a tuberculous meningitis or other tuberculous manifestation.

DISEASES AND NEW GROWTHS OF LYMPHATIC ORIGIN *

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When I was first asked to read a paper before the Section on Dermatology of the American Medical Association I hesitated to accept because I did not know anything new to communicate. Then my friend, Udo Wile, proposed that I speak about the changes of the skin in lymphatic leukemia, a subject I have written about. Though many of you will be quite familiar with what I am going to say, there may be some who have not had much opportunity to study this question.

Skin troubles may be the first prominent symptom of lymphadenosis and the skin specialist familiar with these troubles will, in a good many cases, be able to make the diagnosis in a very early stage of the disease. Concerning the nomenclature I think the old names lymphatic and myeloid leukemia should be replaced by aleukemic, subleukemic and leukemic lymphadenosis and myelosis. The essential pathologic feature of lymphadenosis is the generalized hyperplasia of the lymphatic hematopoietic tissue and the essential feature of the myelosis is a generalized hyperplasia of the myeloid tissue. According to the blood-changes, which represent only a symptom, although a very important one—we distinguish, in speaking of lymphadenosis, an aleukemic form, if the blood is normal, a subleukemic form if the number of the white blood-cells is normal or very little increased, but the proportion of the lymphocytes is augmented, and a leukemic form when there is an absolute, permanent, progressive increase of lymphocytes and the total number of leukocytes is augmented.

The changes of the skin that may be observed in the beginning or in the later course of lymphadenosis can, from clinical and histologic points of view, be divided into changes not characteristic at all and not distinguishable from clinically and histologically similar affections of other origin on the one hand, and on the other, changes representing proper localizations of the lymphadenotic process in the skin. The former more frequently met, are called leukemids, a name

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suggested by Audry; the latter are the lymphadenoses of the skin in the proper sense of the word.

LYMPHADENIDS (LEUKEMIDS)

Among the skin lesions not characteristic in themselves are to be mentioned the purpura met especially in the so-called acute mostly large-celled leukemia, first described by Friedreich, Ebstein and A. Fraenkel. In those cases, multiple swelling of the lymph-nodes, enlargement of the liver and spleen may be completely absent, and the most striking features of the clinical picture are either petechial or more diffuse hemorrhages of skin and mucous membranes, the latter often terminating in necrotic lesions of the gums and the mucous membrane of the mouth and suggesting scurvy.

If there is fever or severe troubles of the general health one first thinks of a septic affection leading to the hemorrhagic diathesis and only the blood-picture enables one to make the diagnosis, which might be quite impossible in the aleukemic forms of this type. The purpura can be combined with the formation of blisters, described by Shattuck in this country.

Then there must be mentioned the so-called prurigo lymphatica (first described by E. Wagner, Buschke, Breseendorff). Like the prurigo of Hebra the prurigo lymphatica is characterized by numerous pinhead- to hemp-seed-sized semiglobular or more conical, pale, elastic, edematous papules each bearing on its top a deep-seated vesicle that soon gets scratched off and is replaced by a crust. The skin between these papules becomes thickened, edematous, as the effect of the continual scratching. The surface is dry and scaly. Secondary pus infection (impetigo, furuncles) complicate the picture. In a word, there is, morphologically, a very great resemblance between prurigo lymphatica and the prurigo of Hebra. Whereas, Hebra's disease, however, always starts in early childhood, recurs in more severe attacks during the winter or summer, the prurigo lymphatica starts at every age and shows exacerbations in certain seasons. In prurigo lymphatica one does not find the typical localization of the prurigo of Hebra.

Prurigo lymphatica is not only observed in aleukemic and leukemic lymphadenosis, but also in other more or less generalized affections of the lymphatic apparatus, parenchymatous as well as granulomatous, in lymphosarcoma (Wunderlich, Dubreuilh), in some cases of tuberculosis of the lymphatic glands, in hyperplastic conditions of the lymphatic glands observed in malaria, in lymphogranulomatosis (Hodgkin's disease). Neither the clinical nor the histologic picture (thickening of the epithelium, formation of rare vesicles, status spongioides, chronic inflammatory changes of the superficial layers of the derma) is sufficient to prove the lymphadenotic nature of the condition. The diagnosis has to be based on the blood-finding or the histologic examination of an excised lymph-node.

In other cases you might observe an intense itching, a pruritus, without any visible lesions of the skin or secondary changes, due to scratching or pus infection. This pruritus is not of itself characteristic in any way. Very instructive and convincing of the connection between affections of the lymphatic system and pruritus is the case published by Blaschko. A patient with lymphosarcoma of the supraclavicular glands suffered from very severe itching. After removal of the glands the pruritus disappeared but came back four years later with a recurrence of the lymphatic new-growth.

In other cases of lymphadenosis, one can observe common urticaria, urticaria papulosa or papulovesiculosa (lichen urticatus), multiple formation of furuncles and carbuncles.

More interesting are the cases of universal exfoliative erythrodermia observed in the course of lymphadenosis by Elsenberg, Peter, Wassermann, Nicolau. Those cases show a close resemblance to the so-called pityriasis rubra of Hebra and many observations of cases published under this name may be allied to a lymphadenotic condition. The "leukemic and pseudoleukemic erythrodermias" are characterized by a subacute or chronic progressive reddening of the skin spreading in a shorter or longer lapse of time over the whole, or almost the whole body, by formation of bran-like or flaky scales and enlargement of the lymph-nodes. The latter symptom, however, can be absent as in Wassermann's case, in which Ehrlich had made the diagnosis of lymphatic leukemia on account of the blood-finding and the post-mortem detected a considerable enlargement of the retroperitoneal glands caused by a pure lymphoid hyperplasia.

There may be swelling of the liver and the spleen, but these symptoms are very often absent and the diagnosis can be proved only if an increase of lymphocytes in the blood is shown, the total number of leukocytes being normal or augmented. In case the blood-picture is aleukemic, a histologic examination of an enlarged lymph-node is to be made. To some extent the skin-lesions vary. There may be more or less complete loss of hair and nails; the latter may be cracked and thickened; in one case the skin is thickened, edematous, while in another it is thinned, atrophic, leading to retraction (ectropion of the eyelids, for instance). Fever is frequent but may be absent. Among the subjective symptoms must be mentioned the feeling of chill common to all universal erythrodermias and due to the augmented loss of heat and the itching, mostly not very marked, but sometimes rather intense.

The histologic changes consist in a continuous diffuse or more circumscribed infiltration of the upper layers of the derma, the stratum papillare and subpapillare, the blood-vessels of which are much dilated. The infiltration is formed by small deeply stained round cells—morphologically and after their tinctorial properties identical with the small lymphocytes of the lymph-nodes and larger elements with pale oval nuclei —proliferated connective-tissue cells. The lymphocytes surround the vessel follicles, sweat-glands and sebaceous glands; the fibroblasts are more diffusely spread between. Except the cell-forms mentioned you find mast-cells and pigment cells, the latter sometimes in very large numbers. In Nicolau's case they formed at the lower border of the infiltration a band consisting of three or four rows of cells. The rete malpighii is mostly atrophic and covered by a more or less hypertrophic horny layer.

A differentiation of these "pseudoleukemic and leukemic erythrodermias" from other universal chronic exfoliative reddenings of the skin of unknown origin, especially from the genuine pityriasis rubra of Hebra, is quite impossible by means of clinical and histologic study of the skin only. It has already been mentioned, and especially Jadassohn and Nicolau insist on the point, that some of the cases of Hebra's disease belong to the lymphadenosis (lymphatic leukemia and pseudoleukemia of the old nomenclature). A critical analysis in that respect is quite impossible; so far as I know in no case published as pityriasis rubra of Hebra

has a reliable blood-count been made. In every case of chronic universal exfoliative erythrodermia the blood must be examined at different times, repeatedly, with special regard to the differential count, and the diagnosis of pityriasis rubra of Hebra can be made only after excluding a leukemic and a tuberculous erythrodermia (cases of the latter described by Jadassohn, Brunsgaard, Wertheim-Finger, as you know). As the histologic findings of the universal exfoliative erythrodermias encountered in lymphadenosis are not especially characteristic, common chronic inflammation (perivascular round-cell collections and proliferation of the connective-tissue cells), they must be differentiated, at least for the present, from the clinically, not so much, as the histologically absolutely characteristic, universal, lymphadenotic (lymphatic-leukemic) infiltrations of the skin.

Suppose the cause, the pathologic agent or agents of lymphadenosis will be discovered one day, suppose the bacteriologic facts found by E. Fraenkel and Much, and by myself—not very convincing now—will be confirmed by other authors and put on a solid experimental basis—suppose all that, and the more or less artificial borders put up between the true clinically and histologically well-characterized lymphadenosis of the skin and the non-characteristic so-called lymphadenids (leucémids—Audry) will disappear.

THE PROPER LYMPHADENOSIS OF THE SKIN

The proper (leukemic, subleukemic and aleukemic) lymphadenosis of the skin represents a pathologic condition completely equivalent to the changes of the inner organs caused by a generalized hyperplasia of the lymphatic tissue. The lymphadenosis of the skin may be divided (after Riehl, Paltauf, and F. Pinkus) into a diffuse or better, universal form, and a circumscribed form causing flat infiltration, nodes or tumor-like swellings.

In the so-called myelosis (myeloid leukemia)—characterized by a generalized hyperplastic proliferation of myeloid tissue—a diffuse universal participation of the skin with typical histologic structure (myeloid tissue) has not been observed. There is a circumscribed myelosis of the skin, however, first perhaps described by Hindenburg and lately by Brunsgaard from Christiania, in a very remarkable paper. Histologically myelosis cutis shows perivascular myeloid cell-formations, that mean neutrophil and eosinophil myelocytes, myeloblasts, giant-cells (megacaryocytes) and nucleated red corpuscles. In comparison with the circumscribed lymphadenosis the circumscribed myelosis of the skin is extremely rare and there have been observed only a few cases.

UNIVERSAL LYMPHADENOSIS OF THE SKIN

The conception of the universal form is not very well defined and has not been accepted by all authors, a fact probably due to the extreme rarity of the cases. Some authors—for instance, Felix Pinkus, who has written an excellent article on lymphatic leukemia of the skin—mix the universal form up with the so-called lymphodermia perniciosa.

The name "lymphodermia perniciosa" has made great confusion and has been applied to quite different processes showing certain clinical similarities. Kaposi first used this name for a case studied by himself and well known from the literature. No exactly analogous case has ever been observed since, by Kaposi or any other author. Tallant thinks that the pathologic changes in the original case ought to be considered as an atypical malignant proliferation of the lymphatic tissue-leukosarcomatosis, in the sense of Sternberg. Most of the cases reported afterward as lymphodermia perniciosa correspond to the type called by the French authors (E Besnier, Vidal, Hallopeau, Jeanselme, Leredde) *érythrodermie prémycosique;* some of them are perhaps identical with the universal form of lymphadenosis.

A satisfactory critical analysis of all the material referring to that subject is scarcely possible, as most of the publications are of an older date and do not give a sufficient description of the hematologic and histologic picture. By clinical observation alone a differentiation of all these processes cannot be made. Clinically their similarity may be striking. Universal reddening and more or less considerable tumefaction of the skin in connection with swelling of all the palpable lymph-nodes, and with enlargement of liver and spleen may be found in generalized purely hyperplastic and perhaps also in aggressive malignant proliferation of the lymphatic apparatus as well as in certain—principally in the lymphatic tissue—localized infectious granulomas (mycosis fungoides and perhaps lymphogranulomatosis). As we do not know very much about the cause of these different conditions they must be differentiated by their pathologic picture. Their diagnosis has to be based on the histologic findings. The blood-picture may be of great value for the diagnosis if it shows characteristic alteration, but if it is normal or only slightly changed it is of no use in the classification of those affections. Therefore, I suggested to divide the universal infiltrating erythrodermas observed in the course of the different affections of the lymphadenoid tissue, on account of the histologic changes, into four groups: (1) lymphadenotic (lymphatic-leukemic), (2) lymphosarcomatous, (3) mycotic, and (4) lymphogranulomatous erythrodermias.

The number of the cases of universal infiltrating erythrodermia, in which there can be no doubt, clinically, hematologically or histologically—about their lymphadenotic nature, and which should be called lymphadenotic erythroderma (diffuse lymphadenosis of the skin) is very small and amounts only to four, including one personal observation. The first case has been described by Riehl of Vienna, to whom we are indebted for the knowledge of this disease and the second one has been observed and published by Linser of Tübingen, the third one, by Rodler-Zykin in Jadassohn's clinic, differs rather from the classic type.

I shall not bother you with the history of my own case. You will find it in my publication on this subject. There was a universal intensely itching swelling and reddening of the skin, enlargement of all the palpable lymph-nodes especially the axillary, inguinal and crural. The blood-picture was that of lymphatic leukemia, total number of leukocytes 40,000, lymphocytes 60 per cent. (among them 11 per cent. of large atypical forms). The histologic examination of an excised piece of skin showed the characteristic lesions—a continuous, diffuse, pure lymphocytic infiltration of the two upper thirds of the derma, going down to the lower third of the cutis propria and the subcutaneous tissue in form of perivascular and periglandular cell-collections.

The infiltration seems to be very monomorphous—at least at the first glance—and contains numerous newly formed much-dilated vessels. If the infiltrating cells

are examined with a higher-power lens it may be remarked that they are all lymphocytes, but that the common so-called small lymphocytes are rather scarce and that the large forms with pale round or oval, sometimes kidney-shaped and lobulated nuclei, the so-called lymphoblasts and atypical forms, prevail.

Mitoses are very numerous. There is no proliferation of the connective tissue. The original connective tissue is mechanically dislocated and forms a sort of network, the meshes of which are filled in by the lymphocytes. The epidermis is in some parts proliferated, in others atrophic. The papillary and subpapillary layers show a very marked edema, dilatation of blood-vessels, but very little infiltration, so that regarding the sections with a low power, the uppermost layer of the derma seems to be normal. About the bacteriologic findings I shall speak later.

In the later course the number of leukocytes increased considerably (up to 120,000, 78 per cent. of which were lymphocytes). The patient died one year and nine months after the first trouble of the skin had appeared. The post-mortem showed diffuse lymphatic leukemic changes of the skin, adhesive pericarditis, fatty degeneration of the heart-muscle, aneurysm of the aorta descendens, hydrothorax (left side) and edema of the lungs, leukemic infiltration of the liver, spleen, kidneys and lymphatic glands.

CIRCUMSCRIBED LYMPHADENOSIS OF THE SKIN

While the clinical picture of the diffuse lymphadenosis of the skin is not very well characterized, the diagnosis of the circumscribed form is not so difficult and can be made with more or less probability. The two forms never go into each other. The circumscribed type neither terminates in a universal swelling of the cutis nor are there well-defined tumor-like growths to be observed in the course of the lymphadenosis universalis. The circumscribed patches and tumors are observed in the aleukemic, subleukemic and leukemic lymphadenosis.

My personal observations of circumscribed lymphadenosis of the skin concern three cases of subleukemic and two cases of aleukemic lymphadenosis (in the latter the blood examined at different times being absolutely normal).

These facts are of certain value and prove the identity of processes that show pathologically the same changes but differ as to the blood-picture and were formerly strictly separated as lymphatic, leukemic and pseudoleukemic. Ehrlich and his pupil, F. Pinkus, the well-known dermatologist in Berlin, showed first that the lymphatic, leukemic and pseudoleukemic are the same process. Long before them, J. Orth had, on account of the pathologic findings, pointed out their relationship.

DIAGNOSIS OF THE CIRCUMSCRIBED LEUKEMIC AND ALEUKEMIC LYMPHADENOSIS OF THE SKIN

An absolutely certain clinical diagnosis of these lesions is impossible considering the rarity of the affection on one side and certain similarities with other processes on the other side. Nevertheless, you can, in the great majority of cases, conclude on the nature of the skin lesions, and I shall try to sketch the most important clinical features. First of all, the localization is very characteristic, the face being the seat of all predilection that is taken either exclusively or generally. It is quite an exception that it does not show any changes like in the much discussed case observed by Nékam. There are other skin diseases, of course, that prefer the face (lupus vulgaris, lupus erythematosus), but the appearance of chronic tumor-like swellings of the face reminding one of sarcoma, must always raise the suspicion of lymphadenosis.

Especially the nose and the adjoining parts of the cheeks, the eye-lids, lips, chin, ears and ear-lobes are involved. The infiltration of the eye-brows and glabella gives the face a most characteristic appearance recalling the facies leontina of the lepers. Frequently the scalp and upper extremities, especially the backs of the hands, are affected at the same time as the face.

Among the less frequent localizations are to be mentioned the skin of the breast, especially about the mammae (Pfeiffer, second of my cases), abdomen, scrotum (one of my observations), glans penis (infiltration of the corpora cavernosa in one of my cases). Occasionally every part of the body may be involved, but the cases with numerous nodules all over the body (head, trunk and extremities), cases described by Biesiadecki, Hochsinger and Schiff, Kreibich (second case Feger), are extremely rare.

Concerning the shape of the lesions it must be mentioned that more or less well-defined, macular, slightly elevated patches and semiglobular projecting tumors develop close together and turn one into the other. I think that this fact is very characteristic and of value, making the diagnosis with the genuine new growths (sarcoma).

The formation of ringed, festooned lesions either by central involution and peripheral spreading of a single patch or by juxtaposition of different smaller patches is quite unusual in lymphadenosis, whereas it is frequently seen in mycosis fungoides. The flat patches may persist for years without transformation into tumor-like new growths. The size varies within the widest limits. The patches vary from the size of a silver dollar to an area corresponding to two palm's breadths and more. The tumors are from pea-size up to the size of two fists and are sometimes lobulated, showing that they have formed by coalescence of different smaller new growths.

The color is mostly a peculiar yellowish-brown or yellowish-brown red, rarely bluish-red, on pressure translucent, reminding one of lupus vulgaris. If there is a hemorrhagic diathesis at the same time, the tumors may be the seat of hemorrhages and look like melanotic new growths (dark blue, bluish-black). If the infiltrations are localized only in the deeper layers of the cutis propria and in the subcutaneous tissue, the surface may appear quite normal or only show a slight bluish tinge.

Sometimes the tumors are firm to the touch, sometimes soft and always of a somewhat elastic edematous consistence. The changes remain always localized to the derma and hypoderma or to the subcutis alone; they never take the underlying tissues. The visible mucous membranes are, as a rule, free from lesions except some slight edema. There are only three cases of lymphadenosis (observed by Fröhlich, Pfeiffer, Kirkoroff) with typical changes of the mucous membranes of mouth, pharynx and larynx.

Most of the cases of so-called leukemia and pseudoleukemia cutis, with formation of nodes about the pharynx, the uvula, the soft palate, etc., or with diffuse infiltrations of the mucous membranes of the pharynx and larynx are lymphosarcoma (Case Fano and Liebmann, case Schultz). A very striking feature is the absolute want of any signs of a regressive metamor-

phosis (softening disintegration). Even if rather large tumors disappear suddenly, for instance, after an erysipelas, or a pneumonia, there is only a slight atrophy of the skin left. True scarring is never observed. It is quite exceptional that the new growths ulcerate. Only in one case (Nicolau) has there been a superficial ulceration. The course is very characteristic. After growing rather rapidly to a certain size they may remain stationary for years or grow but very slowly. The subjective symptoms are, in the majority of cases, very trifling and consist in some burning sensations recurring from time to time, and in a certain pain on pressure.

Of great importance in diagnosis are, of course, multiple symmetrical swellings of the lymph-nodes especially of the retromaxillary and submaxillary regions, about the neck, the axillae and the groins. These enlarged glands may be found in other diseases of the lymphatic system, however, leading equally to tumor-like conditions of the skin, and on the other hand, in lymphadenosis the palpable lymph-nodes may be of normal size. In three of my cases nobody would have thought of lymphatic leukemia by examining the lymphatic glands. The same is true of enlargement of the liver and the spleen.

The blood-picture is a great help if it shows the characteristic changes of leukemic and subleukemic lymphadenosis, but if it is aleukemic, that means normal, it cannot influence the diagnosis. The blood-finding alone is not always reliable, since leukemic blood-findings may be seen in atypical new growths of the lymphatic system (lymphosarcoma, leukosarcomatosis) and in certain forms of mycosis fungoides. Therefore, a histologic examination should be made in every case.

The histologic picture is absolutely typical and shows a pure, lymphocytic infiltration of the skin and the subcutaneous tissue, stopping with a very sharp line just beneath the papillary layer. The epithelioma (normal or flattened) is always separated from the tumor-like infiltration by a narrow, somewhat edematous zone, in which one can only with a high-power lens detect some newly formed cells. This distribution is very characteristic. The original collagenous tissue is dislocated and forms a kind of reticulum; the elastic tissue has been destroyed in the center of the large tumors. In the smaller patches, it may be rather well conserved.

In the large tumors absence of follicles, sebaceous glands and sweat-glands may be observed. In the smaller patches one can see that the process very often starts in the neighborhood of the hair follicles, the sebaceous glands and sweat-coils, which are well conserved. This perifollicular, periglandular localization is due to the fact that follicles, etc., are surrounded by a very well-developed system of capillaries.

At the first glance and employing the ordinary stains, it looks as though there was only one cell-form, small, more or less round elements with a very narrow border of protoplasm or without protoplasm, and a dark-stained nucleus showing sometimes a sort of wheel structure employing certain stains (polychrome, methylene blue, methyl green, pyronin and a combination of Much, Grünwald, Gram), one is able to differentiate between the different forms of cells.

Most of the infiltrating cells are of the type of the so-called small lymphocytes of the lymph-nodes but there are also irregularly scattered lymphoblasts and lymphoblastic plasma-cells (cells with a large, pale, round or kidney-shaped, lobulated nucleus, two or more very distinct nucleoli and a narrow border of protoplasm, that takes the pyronin more or less intensely). At the periphery there are some proliferated connective-tissue cells.

Lymphocytic plasma-cells (type Marschalko) are absent in the majority of cases but sometimes they are found, as in one of my cases, in which they were rather numerous in some sections. Mitoses are very rare.

PATHOGENESIS

There are two different theories about the origin of the lymphadenotic infiltrations of the skin. Some authors (Kreibich, Nékam, Nicolau) thought that innumerable lymphocytes emigrated and were deposited in the neighborhood of the blood-vessels; that there was no local proliferation of lymphocytes at all or only to a very small amount. In favor of this theory, the above-mentioned authors noted the absence of inflammatory changes and proliferative lesions of the connective tissue, the lack of mitoses, in spite of the extraordinary quantity of newly formed cells, the presence of small lymphocytes in the lumen, the walls and the neighborhood of the same vessel and the universal distribution in some cases.

This theory was opposed by Felix Pinkus. Basing his theory on Ehrlich's doctrine that the lymphocytes had no self-movement, he said it was quite impossible or at least very improbable that the numerous cells forming the lymphadenotic infiltrations came exclusively from the blood. Concerning the lack of mitoses, he found something analogous in the lymphatic glands of his own case—very few mitoses and absolute absence of germinating centers.

He thinks that in the early stages of lymphatic leukemia there is an overproduction of lymphocytes but later on a sort of stasis takes place. Based on Ribbert's theory that the lymphatic tissue is spread all over the body, he explains the origin of the lymphadenosis cutis by a local proliferation of the preformed lymphatic tissue of the skin, produced by the leukemic condition, analogous to the lymphatic proliferations in the lymph-nodes, the spleen, marrow, lungs and kidneys. Suppose that, normally, there is lymphatic tissue in the skin, the theory of Pinkus seems to be the most plausible. There can be no doubt that in some cases the cell-proliferation by indirect division exists. Nékam and Nicolau insisted on the lack of mitoses. I found karyokineses in two of my cases of circumscribed lymphadenosis cutis and in my case of universal lymphadenosis they were quite numerous.

On the other hand, it is possible that some of the lymphocytes come from the blood. We know from the researches of Max Schultze, Hirschfeld, Wolf, Maximow, Jolly, Helly, Schwarz, Schridde and Zieler, that the lymphocytes are capable of moving or at least acquiring this power of self-movement under certain pathologic conditions.

Schridde lately contested the existence of rudimentary lymph-follicles in the fetal connective tissue, considering the perivascular cell-collections found by Ribbert to be myeloid formations (consisting of myelocytes, myeloblasts, nucleated red cells, megakaryocytes) which are wide-spread in the embryonic organism. For the explanation of the perivascular formation of the lymphadenotic infiltrations of the skin the preexistence of preformed lymphatic tissue is not nec-

essary. It is quite possible that the lymphatic new growths originate from the perivascular lymphocytes of the adventitia, the so-called *Adventitiazellen* (Marchand) or from the endothelial cells of the lymphcourses changed by metaplasia (Schridde) or from the so-called *Gefahsrandzellen* (Pappenheim).

ETIOLOGY

We know nothing absolutely certain concerning the cause of the generalized hyperplasias of the lymphatic system. The so-called acute leukemia is perhaps of infectious origin, although it is sometimes quite impossible to exclude a secondary infection in these cases, and many authors think that the acute forms are quite another disease and have nothing to do with the chronic lymphadenosis. Concerning the cause of the latter, some pathologists (Orth, Pappenheim) suggested that it was of an infectious nature; others think lymphatic leukemia must be placed among the genuine neoplasms; others consider it as a special trouble quite different from the true new growths and from the infectious granulomatous conditions.

E. Fraenkel and Hatluch inoculated the emulsion of a lymphatic leukemic lymph-node into six guinea-pigs and found, on smears of two swollen lymph-glands, large, partially granular rods, three or four times as thick as tubercle bacilli and partially or completely stained by Gram stain. E. Fraenkel and H. Much found the same Gram-positive, thick, partially granular rods in the antiformin sediment of spleen and lymphatic glands in other cases of lymphatic leukemia. There were no acid-fast rods to be found. The leukemic bacilli of E. Fraenkel and H. Much could not be confirmed by other authors and it is, of course, absolutely necessary to control their findings on a larger material and by animal inoculations.

Then there should be mentioned the very interesting case published by Coley and Ewing in the *Transactions of the New York Pathological Society* under the title of "Acute Lymphatic Tuberculosis (Pure Generalized Lymphatic Hyperplasia Caused by Tubercle Bacilli)." In one of my cases of circumscribed leukemia of the skin, I found, in the sections of skin and spleen, partially extracellular, acid-fast, Gram-positive bacilli. Some of them looked like tubercle bacilli, some of them were thicker. In the case of universal lymphadenosis of the skin I found the same organisms, acid-fast Gram-positive and antiformin-fast bacilli. As I had not at all expected to find acid-fast bacilli in lymphatic leukemia, I had, unfortunately, not inoculated guinea-pigs or monkeys and I cannot say anything about the nature of these micro-organisms. They show, however, that we will have, in every case of lymphadenosis, to look for them and to put these findings on an experimental basis.

The prognosis of the lymphadenosis of the skin coincides with the prognosis of lymphatic leukemia in general.

ABSTRACT OF DISCUSSION

DR. H. H. HAZEN, Washington, D. C.: We American dermatologists have known for a long time of the splendid work of Professor Arndt. We have read some of his articles on skin diseases due to lymphatic derangements and are amazed at the depth and breadth of his pathologic knowledge. This proves that in order to be a good dermatologist, one must first of all be a good general pathologist. We have in this group of diseases the sarcomas, including that of Kaposi, and the curious tumors described by Polland and others. Next come the Spiegler-Fendt sarcoids, and then the various other sarcoids, between which there is often no hard-and-fast dividing line. On the other hand, and likewise grading into the sarcomas, we find the lymphatic diseases, which may roughly be divided into leukemic and aleukemic. In the first group belong acute and chronic lymphatic leukemia, which merge one into the other, and the myeloid leukemia and also chloroma. In the aleukemic group we may place multiple myeloma, Mikulicz' disease, Hodgkin's disease, myocosis fungoides and certain lymphomas such as those described by Winfield. Nearly all of the aleukemic growths may become leukemic. Wende has described a typical case of Hodgkin's disease or pseudoleukemia that terminated in leukemia, and the case of mycosis fungoides reported by Pardee and Zeit, although the blood-counts might not bear critical examination, ended in leukemia so far as the blood-picture and the necropsy findings could be interpreted. We must bear in mind that when there is any visceral complication in mycosis fungoides, it is limited to the lymphatic glands or the bone-marrow. In addition, certain cases of lymphodermia perniciosa (of Kaposi) seem to be a direct connecting link between leukemia and mycosis fungoides, while the leukemias are connected with the sarcomas through the so-called leukosarcoma of Strenberg, a condition of which most Americans have heard very little. Certain other diseases also show a relationship to the sarcomas. Some years ago White and Proescher described a spirochete as the cause of some of these diseases, but their work has not been confirmed. More recently, however, Bunting and Yates seem to have isolated a bacillus as the exciting organism in Hodgkin's disease. In diagnosis, Dr. Arndt has rightly emphasized the fact that leukemic conditions may have aleukemic periods, and at such times a blood examination would be positively misleading. He calls attention to the necessity, in such cases, of studying tissue obtained by biopsy, but it seems to me that there might be some danger of confusing a leukemic condition with a benign lymphoma, as in the case of Winfield. In the treatment of these conditions, the Roentgen ray should be used, possibly combined with benzol. Will Dr. Arndt give the German conception of lymphogranulomatosis, concerning which some of us are a trifle hazy?

DR. JOHN A. FORDYCE, New York: Dr. Arndt's lucid description of these lymphatic affections of the skin will lead us to study our cases more carefully from both a clinical and a histologic point of view. In the last few years I have had two cases of universal lymphadenosis similar to the condition described by Dr. Arndt. One case what that of a woman with a generalized erythrodermia without much exfoliation, together with enlargement of the lymphatic glands. That case undoubtedly belonged to the group described by Dr. Arndt under the name of universal lymphadenosis. After trying all the usual remedies in this case, we resorted to the Roentgen rays, to which the lesions yielded rather rapidly, and at present the patient shows only a few recurrent lesions, with some thickened patches of skin. It has been found impossible completely to eradicate the condition. The picture never looked anything like mycosis fungoides. Several blood examinations were made without any definite findings, but after listening to Dr. Arndt's paper we will proceed to make a more careful examination. Some years ago I had another case of generalized thickening of the skin, with lymphatic enlargement, which at the time was regarded as one of premycotic erythrodermia.

DR. A. RAVOGLI, Cincinnati: While studying under Hebra years ago, I saw many cases of prurigo, and he usually referred to them as scrofulodermata and prescribed cod-liver oil with excellent results. The lymphatic exudation in the derma constituting the small papula of prurigo offers a good explanation for its persistency, and for the itching sensation, which it causes. In granuloma fungoides, although the leukemic condition has been advocated by Brocq and others, yet there may be a peculiar infection, which we so far do not know, which causes the proliferation and the fungous growths of the lesions. It is possible that the lymphatic system acts as an important factor in some cases of erythroderma, of which we have, so far, no idea of their etiology.

Dr. Martin F. Engman, St. Louis: The more we study and follow the literature on the differences between the so-called granuloma and malignant growths, the more we must realize that too much dependence cannot be placed on the morphologic aspect of the subject. The experimental work done by Rous and others on the dog and chicken tumors shows that in one there was produced, apparently, a granuloma and in the other a sarcoma. The original irritation, be it a micro-organism or of chemical nature, may cause certain lymph-changes and produce certain objective clinical symptoms, and as these increase, we may have later the typical blood-changes, which in the earlier types may be absent, while in other cases they follow very quickly. In the literature on mycosis fungoides, we are given the blood-findings, yet a differential count is unique. In skin affections, leukocytosis alone means nothing. We reported six cases of mycosis fungoides, with indefinite blood-findings; later, we obtained a leukocytosis, but the cells were composed of polymorphonuclear leukocytes, without any increase in the lymphocytes. In the tuberculid group we have one case now under observation, and we have found that all these cases run a high mononuclear count. The whole classification depends largely on the blood-findings.

Dr. S. Pollitzer, New York: The entire subject of the leukemic diseases of the skin is relatively new and has been studied only since the establishment of hematology on a scientific basis by Ehrlich. These cases are, of course, very rare, although they are not so rare as their scant report in the literature would lead us to believe. I have been looking for leukemic affections of the skin for several years, and I am sure that in the past I overlooked some cases. I have at present under observation a man with typical lesions of leukemia, and with both a relative and absolute lymphocytosis. A relatively uncommon feature in this case is the occurrence of bullae of the deep-seated type, that when ruptured, healed slowly. Their cell-content is largely lymphocytic. I also have in mind a woman with nodular fawn-colored lesions on the extremities, pea-sized and smaller, many of them excoriated, who came to me because of a pruritus which was confined mainly to the extremities. I suspected a leukemic affection, but a blood-count showed a normal blood-picture. I then made a biopsy and was surprised to find that I was dealing with a rather unusual form of leprosy. I think it is quite impossible to separate the generalized erythrodermia of mycosis fungoides and pityriasis rubra from erythrodermia leukemica on clinical grounds. Jadassohn, who was the first to range pityriasis rubra with the tuberculids, did not by any means maintain that all cases of pityriasis rubra belonged to that class. It is evident that erythrodermia is a symptom of many different systemic disorders of a toxemic character. Cases of mycosis fungoides, which do not properly belong to the group described by Dr. Arndt, are far more frequent than those of the leukemic affections. In the extension statistics collected by the American Dermatological Association covering three-quarters of a million cases of skin diseases, we have thus far made no place for the leukemic affections of the skin, whereas mycosis fungoides has been reported in the proportion of one case to every three thousand.

Prof. G. Arndt, Berlin: I purposely omitted any discussion of various affections of the lymphatic tissue, such as lymphosarcoma, lymphogranuloma and leukosarcoma. Lymphogranulomatosis, concerning which Dr. Hazen asks, is essentially the same as Hodgkin's disease, or malignant granuloma, with swelling of the lymph-nodes, the liver, spleen, and so on. The blood-picture in these cases is either normal, or there may be hyperleukocytosis, sometimes with eosinophilia; no lymphocytosis. The histologic picture in these cases is quite characteristic, and differs from that in ordinary hyperplasia of the skin: here we have small and large lymphocytes, with giant-cells of a peculiar type, sometimes reminding one of the giant-cells of sarcoma, with one huge, bizarre nucleus. We know nothing about the etiology of Hodgkin's disease. Many regard it as a form of tuberculosis; others think it is an infectious granuloma of unknown origin; others, again, that the lesions may be caused by different pathologic agents, such as those of tuberculosis, leprosy or rachitis. Many different opinions exist and it is quite impossible to be positive. We see in lymphogranulomatosis, skin lesions, such as those of prurigo, pruritus and many others. The histologic features of lymphogranulomatosis are quite characteristic, and so long as we do not know the cause of those diseases, we have to differentiate them by their pathologic and histologic pictures as strictly as we can. One day, doubtless, we shall learn the cause of mycosis fungoides, but so long as we are ignorant of it, we must insist on a strict differentiation based on histologic and pathologic grounds. We often get a leukocytosis in the blood-picture in mycosis fungoides, and there is a group of cases—I have seen two or three—which present a rather characteristic blood-picture, with an increase of the large mononuclear cells and of the eosinophils, a picture which we never get in leukemia.

PARESIS PATIENTS TREATED WITH INTRASPINAL INJECTIONS OF SALVARSANIZED SERUM

A BRIEF REPORT*

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Paresis is such a hideous and destructive disease that physicians are always on the *qui vive* for a hopeful method of treatment. Mercury, iodids and the various arsenical preparations seem to be of very little use as ordinarily administered in paresis and many cases of tabes and cerebrospinal syphilis. This fact led Swift and Ellis[1] to experiment in animals with intraspinal injections of salvarsanized and neosalvarsanized blood-serum. Later these methods were applied to man with results already familiar to you. Swift and Ellis, however, specifically declare that they are presenting their method, not as a substitute, but rather as an adjuvant to the generally accepted forms of treatment.

Concerning the rationale of the method there is perhaps some difference of opinion. Myerson[2] warns against expecting too much of it, partly on the ground that the flow of the cerebrospinal fluid is centrifugal rather than centripetal as regards the tissues of the central nervous system. At the same time he urges further trial on the basis of his own results. The finding of the treponema in the central nervous system has of course increased the theoretic hopefulness of the method. It is well known that meningococcus antitoxin is effectual only when injected into the subdural space or ventricles. Viton[3] thinks that he can increase the permeability of the meninges by intraspinous injections of a weak solution of mercuric cyanid. If, as Mott[4] believes, the cerebrospinal fluid plays the part of a lymph in the central nervous system acting in part as a nutrient fluid, then it should be able to convey medicinal substances to some, at least, of the brain-cells. This is in agreement with the view of

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Swift, Homer F., and Ellis, Arthur W. M.: New York Med. Jour., 1912, xcvi, 53; The Treatment of Syphilitic Affections of the Central Nervous System, with Especial Reference to the Use of Intraspinous Injections, Arch. Int. Med., Sept. 15, 1913, p. 331.

2. Myerson, A.: Intraspinous Injection of Salvarsanized Serum, Correspondence, The Journal A. M. A., Jan. 31, 1914, p. 396.

3. Viton, J. J.: Reactivation of the Permeability of the Meninges in Treatment of Syphilis of the Nervous System, Semana méd., Dec. 11, 1913; abstr., The Journal A. M. A., Feb. 14, 1913, p. 582.

4. Mott, referred to in: The Production of Cerebrospinal Fuid, Editorial, The Journal A. M. A., March 28, 1914, p. 1018.

Swift and Ellis on the direct continuity of the subarachnoid space with the lymph channels and spaces.

Hough,[5] McCaskey,[6] Cutting and Mack,[7] Krida,[8] Lorenz,[9] Riggs,[10] and various European medical men have employed intraspinal injections, usually with encouraging results. That the method is not entirely free from danger is shown by Lorenz' two deaths and by some of my own cases. After treating five cases Lorenz changed to direct intraspinal injection of very dilute solutions of neosalvarsan with good effect. In the seven fatal Los Angeles cases, the patients received serum to which neosalvarsan had been added, if I am correctly informed.

I have had thirteen patients under treatment altogether, two of whom received only one intraspinal injection each, and do not appear in the tables. Of these two, one is not improved and the other is dead. This man did not bear salvarsan well when it was administered intravenously, but it was thought best to try an intraspinal treatment. Following this he had a paretic seizure and died in about six hours. He had had one paretic seizure before coming to the hospital last January, followed by pupillary irregularity, increased knee-jerks, mental confusion and disorientation, also persisting muscular weakness. The spinal fluid Wassermann was positive.

In all sixty-two intraspinal treatments have been given with the following technic: Only salvarsan has been used and wherever an intravenous salvarsan injection is shown in the tables the intraspinal injection was given on the following day. A few intravenous injections are indicated which were not followed by the usual intraspinal treatments. As soon as the blood was withdrawn the fibrin was whipped out and the blood diluted with an equal amount of physiologic salt solution, so as to make a fifty per cent. serum. This was left in the ice-box over night, the serum removed the following day and heated at 56 C. for from one-half to one hour, the period varying somewhat. The injection was made with an ordinary glass cylinder, a small rubber bulb being attached to the lower arm of a glass T, so as to make slight pressure when needed. The usual interval before withdrawal of blood was one hour, but this was sometimes shortened to one-half or three-quarters of an hour. McCaskey[11] now recommends an interval of only twenty minutes, as he thinks the spirocheticidal power of the blood is then at its height. After some vacillation I decided on 30 c.c. of 50 per cent. serum as a standard dose, an approximately equal amount of spinal fluid being withdrawn. The usual interval between treatments was two weeks.

Of the eleven patients shown in the tables, six show improvement in some respect, not necessarily clinical, one is no better and four are dead. It must be remembered, however, that most of the entire series were well-advanced cases and that paresis is a desperate disease. In most cases the tendency has been toward a reduction in the amount of globulin and of albumin, in the number of cells and in the spinal fluid Wassermann. For the Wassermann test 1 c.c. of spinal fluid was used except in a few instances in the beginning. Noguchi's butyric acid reagent was used for globulin and for albumin the trichloracetic acid method of Mestrezat as outlined by Myerson.[12] The cells were counted in an ordinary counting-chamber with a Tuerk ruling.

CASE 1.—White man, aged 43. One year before commitment as insane was a dipsomaniac patient at this hospital. At that time showed slight Romberg and some tremor of tongue and fingers. In September, 1913, had a paretic attack with confusion and probably clouding of consciousness. Came to hospital Oct. 4, 1913, with well-marked speech defect, disturbance of gait and writing, absent knee-jerks, impairment of memory and judgment and slight euphoria. History of chancre five or six years previously. December 15, blood Wassermann positive. Jan. 29, 1914, was given 0.3 gm. salvarsan intravenously, followed in an hour by withdrawal of 60 c.c. of blood. Sharp reaction, chill, rise of temperature, marked disorientation, clouding of consciousness and muscular incoordination. The following day the patient's condition was much improved and he was given 10 c.c. of his own serum intraspinally. No severe reaction followed. Two weeks later patient received 0.3 gm. salvarsan on one day and 15 c.c. of serum intraspinally the following day. On the day after he became very excited, talkative and irrational. He developed a bronchopneumonia, perhaps from aspiration of food, and died on February 23. February 13, spinal fluid Wassermann was positive.

CASE 2.—White man, admitted Oct. 19, 1911, aged 42. Symptoms since August, 1910. Grandiose delusions, later well-marked signs of paresis. Oct. 19, 1912, spinal fluid showed well-marked increase in protein and cells. Patient very weak and stupid, but not bedridden, at time of first intraspinal treatment. Jan. 31, 1914, he was given 10 c.c. of another patient's serum and on February 14, he received 25 c.c. Two days later he was placed in bed on account of increasing weakness, with some stiffness of muscles of back and a partial Kernig sign. February 27, he was given 20 c.c. of serum. Cells had dropped from 300 to 45, but Wassermann was strongly positive. Patient died on March 1.

CASE 3.—White man, aged 28. An early case of paresis. Admitted Jan. 9, 1914, with rather aggressive grandiose ideas, but not much mental disorder. Knee-jerks absent, slight pupillary inequality present. No defect of speech or writing. January 19, spinal fluid showed a slight increase of globulin and 23 cells per cubic millimeter. Both blood and spinal fluid gave a positive Wassermann reaction. First intravenous injection of salvarsan February 6, and first intraspinal treatment on the following day. Eight successive treatments altogether at intervals of two weeks, a total of 3.8 gm. of salvarsan and 200 c.c. of 50 per cent. serum. Patient is a little more tractable and contented; globulin and albumin show a slight decrease; cells remain about the same and spinal fluid Wassermann, which was strongly positive on May 16, now gives a negative reaction with 1 c.c. of fluid.

CASE 4.—Colored man, aged 48, symptoms for two months. Admitted Jan. 23, 1913, with considerable mental disorder, hallucinations of sight and hearing, absent pupillary and knee-reflexes, defect of speech and writing, considerable tremor and muscular incoordination. March 22, both blood and spinal fluid gave a negative Wassermann, perhaps because only a very small amount of fluid was used in the test. At the same time the fluid showed increased globulin and 67 cells per cubic millimeter. Patient had grown somewhat worse clinically by time of first intraspinal treatment, which was given Feb. 7, 1914. He received eight successive treatments at intervals of two weeks, a total of 210 c.c. of 50 per cent. serum from other patients. He shows a slight

5. Hough, William H.: Intraspinous Injection of Salvarsanized Serum in the Treatment of Syphilis of the Nervous System, Including Tabes and Paresis, THE JOURNAL A. M. A., Jan. 17, 1914, p. 183.

6. McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, First paper, THE JOURNAL A. M. A., Jan. 17, 1914, p. 187.

7. Cutting, J. A., and Mack, C. W.: The Intraspinal Injection of Salvarsanized Serum in Paresis, THE JOURNAL A. M. A., March 21, 1914, p. 903.

8. Krida: Albany Med. Ann., May, 1914 (reprint).

9. Lorenz: Wisconsin Med. Jour., 1913, xii, No. 6 (reprint).

10. Riggs, C. Eugene: Juvenile Paresis Treated by the Intraspinal Injection of Salvarsanized Serum, THE JOURNAL A. M. A., June 13, 1914, p. 1888.

11. McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, Second paper, THE JOURNAL A. M. A., May 30, 1914, p. 1709.

12. Myerson: Jour. Nerv. and Ment. Dis., 1914, xli, No. 3, p. 154.

decrease of globulin and albumin, but the number of cells remains about the same, while the spinal fluid Wassermann is still strongly positive with 1 c.c. of fluid. Clinically there is no essential change. This patient has had only one dose of salvarsan, 0.3 gm., intravenously.

CASE 5.—Colored man, aged about 40; symptoms for about three years. Admitted Aug. 23, 1913, with many fantastic delusions, hallucinations of hearing, considerable disorientation and impairment of memory, judgment and power of attention. Pupils rigid to light, knee-jerks exaggerated, speech a little slurring and ataxia present for finer movements. Patient was placed on potassium iodid and mercurial inunctions for a period of several months with a few interruptions. He seemed practically unchanged when the first intraspinal treatment was given Feb. 7, 1914. This was followed by seven other injections at intervals of two weeks, 3.2 gm. of salvarsan being given intravenously and 205 c.c. of 50 per cent serum intraspinally. The spinal fluid shows a considerable decrease of globulin, albumin and cells and now gives a negative Wassermann even with 1 c.c. of fluid. Knee-jerks are still exaggerated, but pupils react to light both consenusually and directly and secondary reaction is also present. The patient's condition on the whole seems improved and he is now working out of doors.

CASE 6.—White man, aged 33. Symptoms for six months. Admitted Dec. 7, 1913, with a history of attacks of bewilderment and confusion, during which he would wander away. A very well-educated man who thought he had never contracted syphilis, though he acknowledged exposure. Some mental confusion and disorientation at time of entrance. This never entirely disappeared, though it varied somewhat from time to time. Right pupil larger than left and both rigid to light, both consensually and directly. Knee-jerks exaggerated and speech defective. Dec. 15, 1913, the blood gave a strongly positive Wassermann. Patient was placed on hypodermic injections of sodium cacodylate. He remained practically unchanged at the time of the first intraspinal treatment, which was given on February 13. This was followed by seven other treatments at intervals of two weeks, a total of 1.4 gm. of salvarsan being given intravenously and 205 c.c. of 50 per cent serum intraspinally. This patient shows a reduction in number of cells, but is worse rather than better clinically. He is more stupid and has had several paretic attacks, once a fainting-spell, once a transient facial hemiparesis, and only the other day an attack with mental anxiety, spasmodic movements, aphasia and clouding of

TABLE OF ELEVEN PARESIS PATIENTS TREATED WITH INTRASPINAL INJECTIONS OF SALVARSANIZED SERUM

CASE 1

Date, 1914	Cerebrospinal Fluid: Globulin (Noguchi)	Albumin (Trichloracetic Acid)	Cells Per cmm.	Wass.	Treatment: Intravenous Salvarsan, gm.	Intraspinal Serum (50 %) c.c.
1/29	.....	.....	36	.....	0.3	10
2/12	+++	.....	17	+	0.3	15

CASE 2

1/31	.....	.....	300	.....	..	10*
2/14	+++	.....	42	.....	..	25*
2/27	+++	.....	45	+++	..	20*

CASE 3

2/ 5	+	.....	13	—	0.3	5
2/19	+	.....	40	+	0.3	20
3/ 5	+	.....	50	++	0.4	25
3/19	+	.....	53	++	0.4	25
4/ 2	+	+	40	+	0.6	35
4/16	+—	+	37	++	0.6	30
4/30	+	+	45	++	0.6	30
5/16	+	+	64	+++	0.6	30
6/15	+—	+—	16	—	..	...

CASE 4

2/ 7	++	.....	30	+++	..	20*
2/20	.....	.....	35	+++	..	20*
3/ 5	++	.....	42	+++	0.3	25*
3/20	++	.....	36	+++	..	20*
4/ 3	++	++	38	+++	..	35*
4/17	++	++	44	++	..	30*
5/ 1	++	++	20	+	..	30*
5/15	+	++	40	+++	..	30*
6/15	+	+	31	+++	..	...

CASE 5

2/ 7	.....	.....	...	+	...	15*
2/20	.....	.....	120	+	..	20*
3/ 5	++	.....	80	+++	0.4	25
3/19	+	.....	50	+	0.4	25
4/ 2	+	+	32	—	0.6	35
4/16	+	+	27	+++	0.6	25
4/30	+	+	56	+	0.6	30
5/14	+	+	40	—	0.6	30
6/15	+—	+—	20	—	..	...

* Other patients' serum.

CASE 6

Date, 1914	Cerebrospinal Fluid: Globulin (Noguchi)	Albumin (Trichloracetic Acid)	Cells Per cmm.	Wass.	Treatment: Intravenous Salvarsan, gm.	Intraspinal Serum (50 %) c.c.
2/12	+++	.....	108	.....	0.3	15†
2/26	++	.....	23	+++	0.3	20
3/12	+++	.....	46	+++	0.4	20
3/26	++	.....	33	+++	0.4	30*
4/10	++	++	27	+++	..	30*
4/24	++	++	58	+++	..	30*
5/ 8	+	++	47	++	..	30*
5/22	++	++	60	+++	..	30*
6/16	++	++	20	.....	..	...

CASE 7

3/21	++	.....	36	+++	..	25*
4/ 4	++	++	40	+++	..	40*
4/17	++	++	63	+++	..	25*
4/24	++	++	93	+++	..	30*
5/ 8	++	++	127	+++	..	30*
5/22	++	++	85	+++	..	30*

CASE 8

3/27	++	.....	30	.....	0.3	28*
4/ 9	++	+	35	+++	0.4	40
4/23	+	+	40	+	0.6	30
5/ 7	+	+	36	++	0.6	30
5/21	++	++	32	+++	0.6	30
6/ 4	++	++	120	+++	0.6	30
6/15	+	+	37	+++	..	...

CASE 9

3/27	.....	.....	...	.....	0.3	...
4/ 9	.....	++	80	+++	0.4	25
4/23	++	++	44	+++	0.6	30
5/ 7	Fluid	contained	blood	.....	0.6	28
5/21	++	++	47	+++	0.3	30

CASE 10

3/27	.....	.....	...	.....	0.4	...
4/18	++	++	...	+++	..	25*
5/ 1	++	++	67	+++	..	30*
5/14	++	+++	90	+++	0.6	30
5/29	+++	+++	72	+++	..	30*
6/ 5	+++	++++	153	+++	..	30*
6/15	+++	+++	105	+++	..	...

CASE 11

5/21	+++	+++	190	+++	0.3	30
6/ 5	++	++	51	+++	..	30*
6/15	++	++	70	+	..	...

† Mixed serum.
* Other patients' serum.

consciousness. Pupils are still unequal and rigid, knee-jerks exaggerated and speech difficulty more marked.

CASE 7.—White man, 41 when admitted, May 16, 1911. Said to have been subject to "epilepsy" for four years. At time of beginning of intraspinal treatment patient showed marked mental defect, rigid pupils and absent knee-jerks. Speech was somewhat defective and patient very untidy. The first treatment was given March 21, 1914, the last, May 22. Altogether patient received 180 c.c. of 50 per cent serum, but no salvarsan intravenously. Following the sixth and last injection he vomited and had a moderately high temperature. The next day he became very stupid, had a general convulsion and passed into coma. At this time the pupils reacted moderately to light, but knee-jerks could not be elicited. Neck and back muscles were somewhat stiff. Coma continued, the lungs gradually filled up and patient died on May 25.

CASE 8.—White male, age unknown, but probably about 40. "Overheated" two years before commitment, active symptoms about two weeks before. Admitted Jan. 30, 1914, with considerable mental disorder, grandiose delusions and a history of violence. Left pupil much larger than right and both rigid to light. Knee-jerks reduced, speech and writing very defective and considerable ataxia in certain muscles. First intraspinal treatment March 28, 1914, last on June 5, six being given altogether. Total amount of salvarsan injected intravenously 3.1 gm. Total amount of 50 per cent. serum 188 c.c. There is now a perceptible decrease in the amount of globulin and albumin, but cells remain the same and the spinal fluid Wassermann is still strongly positive. The left pupil is still large and rigid, but the right reacts sluggishly to light. Knee-jerks are present, but not easily elicited. Facial tremor and speech defect are still present and patient's mental condition seems practically unchanged.

CASE 9.—White male, aged 37 when admitted June 4, 1913. Symptoms for two years. Time of infection not known. Delusions of wealth and grandeur and considerable mental defect. Left pupil larger than right and both rigid to light. Right knee-jerk absent, left increased. Speech and writing defective, facial and digital tremor present. No improvement up to time of first intravenous salvarsan injection, which was given March 27, 1914, the first intraspinal treatment being administered April 10. There were four such treatments altogether, with a total of 113 c.c. of 50 per cent. serum, and five salvarsan injections with a total of 2.2 gm. Patient did not seem to bear salvarsan particularly well and it always made him sick. The intraspinal injections did not seem to inconvenience him until May 22. Following the treatment of that day he vomited repeatedly. The next morning he attempted to get up, but was sent back to bed. About 4 p. m. his axillary temperature was 105.4 F. and he was quite stupid. Later he became comatose, but made spasmodic movements of arms, hands, and head. Back, neck and abdominal muscles were moderately stiff and pupils unequal. There had been a reduction in the number of cells in the fluid, but no improvement otherwise. The patient died May 24.

CASE 10.—White man, aged 38 when admitted Aug. 22, 1913 Duration of symptoms at least two months, but probably much longer than that. Many expansive delusions with euphoria. Pupils rigid to light, knee-jerks elicited only with reenforcement. Very considerable ataxia present, speech and writing both very defective. No improvement up to March 27, 1914, when 0.4 gm. salvarsan was administered intravenously. Patient felt a little sick afterwards, but no marked reaction followed. He received only one other dose of salvarsan, 0.6 gm. May 14, or a total of 1 gm. There were five intraspinal injections, 145 c.c. of 50 per cent. serum being administered altogether. There has been no noticeable improvement in any way, but further treatment might bring about a remission.

CASE 11.—White man, aged 27, admitted April 13, 1914, with marked excitement and history of expansive delusions. In January irritable, absent-minded and restless, later excited, irrational and euphoric, with visual and auditory hallucinations. Pupils sluggish to light and knee-jerks exaggerated. Wassermann strongly positive in blood and May 11, also in spinal fluid, with a large increase of globulin and albumin and 240 cells per cubic millimeter. May 21, patient received 0.3 gm. salvarsan intravenously. May 22 and June 5, he received 30 c.c. of 50 per cent. serum or a total of 60 c.c. Globulin and albumin have decreased somewhat, cells have dropped to 70 and spinal fluid Wassermann is less strongly positive. Pupils are more active and patient is a little quieter than he was.

I am indebted to Dr. B. F. Williams for permission to publish this report, to Dr. D. G. Griffiths for valuable assistance in the operating-room, and to Drs. J. J. Snipes and Clarence Emerson for the performance of the Wassermann tests.

Nebraska Hospital for Insane.

RESULTS OF ONE HUNDRED INJECTIONS OF SALVARSANIZED SERUM*

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The passing of parasyphilis is an accomplished fact. Fournier believed that this postsyphilitic condition was capable of evolving a series of diseases any of which might exist independently of an antecedent syphilis. While the truth of this conception has been generally accepted, yet its range has been very generally restricted. The chief expression of this so-called parasyphilitic state is seen in paresis and tabes. Mott believes that Erb's spinal paralysis and certain cases of amyotrophic lateral sclerosis may be regarded as postsyphilitic distrophies. Wilson refers to Dejerine's statement that 20 per cent. of tabetics show some form of muscular atrophy, and says that there is evidence that progressive muscular atrophy is a parasyphilitic affection. While 20 per cent. of tabetics develop primary optic atrophy, (Norris and Oliver), and perhaps 4 per cent. of paretics, yet without doubt it can occur alone as a postluetic disease. Nonne agrees with Fournier that epilepsy may be a parasyphilitic manifestation; it may arise in middle life, last for years, and prove absolutely intractable to antisyphilitic treatment.

There are three distinctive characteristics of so-called parasyphilitic disease:

First, time incidence; the cases rarely occur before from eight to fifteen years after infection, yet cases have been known to appear as early as one and a half and as late as fifty years; in congenital syphilis they usually manifest themselves at puberty, although they may occur very early or as late as the fourth decade. Müller has reported two virgins who became paretic at the ages of 42 and 43 respectively (Wilson).

Secondly, the primary, secondary, or even tertiary manifestations are, as a rule, insignificant in those patients who are destined to develop paresis and tabes. Out of forty cases of tabes 62 per cent. showed only a primary sore after the infection, (McIntosh and Fieldes, Head and Fearnsides). Mott found tertiary manifestations very rare in five hundred postmortems made on general paretics.

Thirdly, the development of postluetic symptoms after a most vigorous and radically administered anti-

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luetic treatment. According to Fournier, "If the virus extends itself in severe primary or secondary manifestations there is less tendency to parasyphilis."

According to Keyes, if the lesions of syphilis are grouped according to the tissue affected, syphilis of the nervous system is its most malignant manifestation. Out of twenty-five hundred cases he found 20 per cent. to be afflicted with this form of the disease. Nervous syphilis, whether it be of the non-degenerative or degenerative type (paresis and tabes) is due to the direct action of the *Spirochaeta pallida* on the affected tissues, nervous or non-nervous. When we speak of the non-degenerative type we refer to the gummas or the diffuse gummatous infiltrations of the meninges, or of these infiltrations around the blood-vessels of the brain or cord, or of syphilitic endarteritis; while by the degenerative form we mean the so-called parasyphilitic states arising from a primary degeneration in certain groups of neurons, namely, the exogenous fibers of the posterior columns in tabes and "the cells of the cortex with the interconnecting tangential fibers" in paresis. Thus it would appear that the toxins of syphilis manifest a selective action for definite nerve tracts. Both of these forms of nervous syphilis may occur in the same patient.

Nervous syphilis is a grave disease. In Keyes' 504 cases of this affection, 60 patients died and 175 were more or less permanently disabled. It is the degenerative type (paresis and tabes) that has proved so peculiarly intractable to treatment. A neuron once degenerated is hopelessly destroyed, and unfortunately these cases usually come to the neurologist after the central nervous elements have become seriously involved. The most that can be hoped for from treatment is an arrest of the degenerative process and the utilization, to the utmost, of the healthy neurons that remain.

Our therapy in the past has been inefficiently directed. We have failed to reach with our spirocheticidal solutions the elusive spirochete which is intrenched in the neurons themselves. There is much difference of opinion as to the anatomic facts concerning the circulation in the central nervous system; as to what channels the salvarsanized serum traverses in its course from the subarachnoid sac to reach the brain. That it does so is no longer a matter of doubt. Cotton found arsenic in the ventricular fluid after an intraspinous injection in two cases that came to necropsy. Cocain injected in the spinal subarachnoid "causes anesthesia of the entire body, so that by this means it is possible to enucleate an eyeball painlessly" (Campbell). The experiments of Flexner and Amoss with the intravenous injection of poliomyelitic cerebrospinal fluid is certainly suggestive that it may be the medium of infection through which the nervous system becomes involved in syphilis.

It would appear, therefore, that the spinal fluid, which Mott believes is the lymph of the central nervous system, is a purveyor not only of nutrition to the central nervous tissues but also of medication and possibly infection as well.

The glandular ependymal cells covering the choroid plexus secrete the spinal fluid. These cells manifest a selective action; certain substances they allow to pass into the cerebrospinal fluid from the blood-stream; to many drugs, notably mercury and potassium iodid they are impervious; salvarsan after an intravenous injection filters through them in minute but very quickly disappearing quantities. It matters not how much the general circulation is drenched with mercury and salvarsan, says Stewart, "those nerve cells and nerve fibers which are being destroyed directly by the syphilitic organism and its toxin intrenched behind the pericellular and perivascular lymph-spaces continue to decay." Success, therefore, in the treatment of degenerative syphilitic disease depends on our ability to overcome the resistance of the choroidal ependyma to the transmission of spirocheticidal drugs. Once accomplish this transit from the vascular to the nervous system, says Harris, and the therapy of nervous syphilis will be a simple matter. Moreover, he has no doubt but that ultimately Ehrlich will discover such an agent.

It is no longer a question of the advisability of the intraspinal injection of spirocheticidal solutions into the spinal and cranial subarachnoid space, but of the drug to be injected and the relative merits of the *in vitro* and *in vivo* methods. It is claimed for the former, whether the neosalvarsan be dissolved in the patient's own serum or spinal fluid or in distilled water, that the solution contains more arsenic and is more actively spirocheticidal. We do not believe, however, that this compensates for the greater risk incurred by the patient. After the tragedy which has followed in its wake, the preference for this method by many, even such investigators as Marinesco and Ravaut, over the safer and equally effectual Swift and Ellis process, is to us unjustifiable and inexplicable. Lorenz reports five cases, in two of which the patients died and in all of which very alarming symptoms followed the injection of salvarsanized serum *in vivo*. This is the first record we have seen of fatal results following the Swift and Ellis method. In our 100 injections, never, with one exception, a case of aseptic meningitis, have we had cause for anxiety.

Dr. Ayer of the Department of Neurology, Massachusetts General Hospital, reports 126 serum injections without any untoward results. In over 200 injections administered at the Boston City Hospital by Dr. Sanborn there were absolutely no ill effects. Dr. Coriat states that in the clinical work done by him no bad results have followed the injections; that clinical and serologic improvement was apparent in nearly every case. Swift and Ellis have had no unfavorable results. The former in a personal letter (to Dr. Hammes) so states and says that their occurrence can only be accounted for on the ground of faulty technic.

Peterson and Stephenson have recently reported some notable results in the treatment of nervous syphilis by what they call the intensive treatment—neosalvarsan intravenously and mercury by inunctions. Their purpose was to obtain a cumulative effect of the drug, that is, "before the activity of the drug was lessened by excretion, more was administered, and in this way the patient, by a process of gradual establishment of tolerance, became saturated with the drug in such a manner that the usual untoward effects of the same were avoided." The method adopted by them was to inject intravenously every third day for five injections 0.45 gm. of neosalvarsan. In tabes, taboparesis and paresis and other severe affections, inunctions of mercury were administered on the days the patients did not receive salvarsan. Of fifteen patients one died; the other cases were uneventful. From the serobiologic reductions in these cases it would appear that the barrier of the choroid plexus was overcome—taken by storm as it were—by this intensive method. In the experiments of Flexner and

Amoss the resistance of the choroid plexus gave way completely after the expiration of ninety-six hours and the virus passed freely.

Dr. Ravaut states that the nervous system is affected in 65 per cent. of the cases of secondary syphilis, even though there be no symptoms aside from a possible headache; an increased cell-count and an excess of globulin determines this invasion beyond cavil. According to Wile and Stokes, 63 per cent. of their cases show evidence in the spinal-fluid of central nervous involvement. Moreover, the absence of the findings indicative of this invasion in a single examination is not conclusive that the nervous system has escaped. Eicke has found the colloidal gold reaction positive in 60 out of 136 examinations, even at times in the absence of lymphocytosis and globulin excess. In some of our own cases there has been neither increase of cellular content nor globulin excess, simply a positive Wassermann of the spinal fluid and blood-serum. Too great emphasis cannot be placed on the importance of the recognition of this early stage of invasion of the nervous system, because this is the one period when the infection can be most successfully overcome. "To determine," says Dr. Ravaut, "the actuality of the nervous disease in what may be called its latent phase, and to make it disappear as rapidly as possible . . . constitutes the true prophylaxis of syphilitic nervous affections."

The following cases are illustrative of the various types of nervous syphilis and fairly represent the entire number of patients whose treatment has afforded the basis for this report.

CASE 1.—J., aged 38, married, cattle-buyer, consulted us Feb. 20, 1914. Personal history is negative aside from lues contracted sixteen years ago, for which he never received treatment.

Three years ago he first felt a tired sensation in the legs; at the same time he noticed a difficulty in starting the flow of urine; about two years ago shooting pains developed in the lower extremities; patient has had to catheterize himself daily for the past twenty months. In February, 1914, the patient noticed a paresis of the right external rectus muscle. During November and December, 1913, he received five injections of salvarsan intravenously and a vigorous course of mercurial rubs with iodid; there was no improvement. At the time of our examination he showed Argyll Robertson pupils, paresis of the right external rectus muscle, loss of knee and Achilles-tendon jerks. The blood-serum gave a negative Wassermann; the spinal fluid was positive; there was globulin excess with 5 lymphocytes per cubic millimeter.

We gave him five intravenous injections of 0.4 gm. each of salvarsan, followed by five intraspinal injections of 30 c.c. of a 40 per cent. solution of salvarsanized serum. After the second treatment the bladder function became normal and he has not since catheterized himself. After the fifth injection the spinal-fluid findings were normal. The paresis of the right external rectus muscle has disappeared; he has gained 11 pounds in weight and feels much improved in every way.

CASE 2.—Mrs. S., aged 42, married. Family history negative. Four children living and well, one miscarriage; menses regular until they ceased six months ago. Fourteen years ago she contracted lues from her husband. Had a short course of mercurial treatments; there were no secondary symptoms. Thirteen years ago she had an attack of acute articular rheumatism; in 1908 she was operated on for right inguinal hernia.

Dec. 6, 1912, patient had a chill with a cold sweat, followed by a severe frontal headache. Twenty-four hours later she became unconscious for thirty-six hours. The urine contained a large amount of sugar and the diagnosis of diabetic coma was made. Neurologic examination, however, showed her to be suffering from cerebrospinal lues. After recovery of consciousness there was severe frontal headache, difficulty in urination, with frequent vomiting spells, which continued for about three weeks. She complained of a feeling of pressure over the precordial region and vertigo was so marked that she was confined to bed for three and one-half months. During the succeeding two months she vomited frequently, especially in the morning; there was also a diffused frontal headache with occasional vertigenous attacks. This condition, with periods of remission and exacerbation, continued until she came under our care Nov. 8, 1913.

From December, 1912, to November, 1913, she had thirty rubs of mercurial ointment 30 grains each, and eight intravenous injections of 0.9 gm. neosalvarsan, which gave temporary improvement. At the time of our first examination after receiving these eight intravenous injections of neosalvarsan, the serobiologic findings were positive Wassermann in both blood-serum and spinal fluid, with globulin excess and lymphocytosis of 392 per cubic millimeter. Neurologic examination showed right pupil larger than left and irregular; left pupil responded to light and accommodation, right sluggish; knee-jerks exaggerated, no Babinski, no sensory disturbances.

Since Nov. 11, 1913, she has had five intravenous injections of 0.9 gm. neosalvarsan, followed by five intraspinal injections of salvarsanized serum. The reaction in this case was unusually marked, evidently due to her neuropathic temperament, since the pulse and temperature were practically normal and she was promptly quieted by a hypodermic injection of sterile water. There was gradual but steady improvement in the clinical picture. The Wassermann reaction became negative in the blood after the fourth injection and remained so. The spinal fluid gave the following reaction: mild globulin excess; lymphocytes four per cubic millimeter, as compared to 392 at the first examination; the Wassermann was positive only in very large quantities, and became entirely negative after the fifth injection. It is worthy of note that the glycosuria completely disappeared after the third intravenous injection of neosalvarsan.

CASE 3.—C., aged 42, married, merchant, consulted us Dec. 1, 1913. Patient denied venereal disease. Illness began two years ago with loss of sexual power. In October, 1913, patient became depressed and forgetful; made mistakes in his business transactions; had insomnia and night-sweats. He developed delusions of grandeur with marked exaltation; will auto from St. Paul to New York in nine hours; is planning to build a million-dollar hospital, etc. There have been frequent mild epileptiform attacks.

Physical examination negative except for double inguinal hernia. Neurologic examination showed an Argyll Robertson pupil, slight Rombergism, lost knee- and Achilles-tendon jerks. There was a positive Wassermann in the blood-serum, also in the spinal fluid in all dilutions down to 0.05 c.c. There was excess of globulin and 216 lymphocytes per cubic millimeter. The colloidal-gold curve was typical of paresis.

He was given, at intervals of two weeks, nine intravenous injections of 0.7 gm. each of salvarsan followed by nine intraspinous injections of salvarsanized serum. The blood-serum is now negative, as is also the spinal fluid except in large quantities; there is only a trace of globulin and four lymphocytes to the cubic millimeter. The mental condition gradually improved after the sixth injection; the patient is now apparently perfectly normal.

CASE 4.—K., woman, aged 34, married. Personal and family history negative. Husband contracted lues at 20. Six years ago she had several chronic ulcers on her left leg, which persisted for a year, but finally healed under potassium iodid and Fowler's solution. Three years ago there was noticeable some disturbance of vision, and ophthalmoscopic examination revealed a luetic, disseminated choroiditis. About two years ago her husband observed that she was unduly jealous and exceedingly nervous; no other symptoms.

The neurologic examination was negative throughout. The Wassermann in the blood-serum and spinal fluid was positive; no globulin excess; no lymphocytosis. After three injections of salvarsanized serum the Wassermann became negative in both blood and spinal fluid and there was decided general improvement. In a recent communication she tells us that she is feeling perfectly well and is better than she has been for years.

In our series of twenty-four cases we gave 100 injections and in every patient who received over four of these combined injections the Wassermann in the blood became negative except in one instance, a juvenile paretic whose blood is still positive after the ninth treatment.

In 75 per cent. of our tabetics the laboratory tests in the blood and spinal fluid have become normal in every way. Aside from this there has been decided clinical betterment, such as marked relief of the lightning pains, a practically normal return of the bladder functions, and an improvement in the general physical condition and in the gait. Two patients who clinically were typical tabetics, in whom the serobiologic findings were negative before the commencement of treatment, were greatly benefited by these injections.

The results in paresis have not been so satisfactory as those in tabes, probably owing to the fact that most of our paretics were in the advanced stage when treatment began; but it can be said of paresis, as of cancer, that even a temporary amelioration of a disease so hopeless is a success for which to be grateful and not a failure to be despised. A greater number of injections are required before any favorable laboratory changes occur. The clinical improvement is variable; one paretic of the dementing type, after eight injections, had a remission lasting four months, while another of the same class showed no clinical change after nine injections, in spite of the fact that the serobiologic findings have become normal. Case 3 with grandiose delusions (classical type) had a happy outcome both clinically and serobiologically after the ninth injection. Another patient, with frequent epileptic attacks, has had only one mild seizure since the first injection, with a marked improvement in the mental picture; the laboratory tests in this patient showed no change. A juvenile paretic showed some clinical improvement following nine injections; the serobiologic reduction being very slight.

Although cerebrospinal lues usually responds to antiluetic treatment, yet certain cases prove most refractory. It is in such cases that the intraspinal salvarsanized serum injections are especially indicated, favorable results being obtained after other methods have failed. In our series of cases there are four patients with cerebrospinal lues and one with tabes who have improved both clinically and serobiologically under treatment, having received very little or no benefit from intravenous injections alone. This is in accord with the experience of Ayer.

The reaction following salvarsanized serum is usually slight; the temperature seldom rises above 100 F.; generally it is about 99, and the rise lasts from twenty-four to forty-eight hours. Severe headache, chills, vertigo and vomiting rarely occur except in certain cases of cerebrospinal syphilis. This reaction in this affection is probably due to the fact that the lesion is frequently located at the base of the brain and near the region of the medulla, and may be of the nature of a Herxheimer reaction. In tabes there is usually a marked increase of the lightning pains for from twenty-four to forty-eight hours, but aside from the period of the injection these appear to be greatly benefited. In one of our patients the pains began exactly three hours after each injection, a phenomenon similar to that which Ayer has observed in two cases. In paresis the reaction is usually negligible, except that rarely there is an increase in the mental symptoms for from twenty-four to seventy-two hours, during which period hallucinations of sight frequently predominate.

In only one instance, as previously stated, have we observed any alarming symptoms. This was in a case of acute luetic meningomyelitis developing on a tabetic base. A report of this case was recently made by Dr. Riggs before the American Neurological Association. Twenty-four hours after the fourth intraspinal injection (the preceding three having been uneventful) the patient became restless, anxious, and there were slight muscular twitchings; temperature and pulse normal. Four hours later the temperature was 104.2, pulse 100, and there was complete unconsciousness which lasted three days. Neck and back were rigid, Kernig present, and there was every indication of acute, suppurative meningitis, but the spinal fluid was sterile. The condition gradually cleared up and the patient is much better than preceding the injection.

Here was evidently an instance of an aseptic chemical meningitis. Lorenz reports a death following such an injection; the spinal fluid showed marked lymphocytosis with globulin excess and he believed the fluid to be non-bacterial. To us this case is most suggestive of an aseptic meningitis. The possibility of an aseptic meningitis, presenting all the characteristics, clinical and pathologic, of the acute suppurative affection without the infecting organism, following the introduction of a foreign serum into the spinal canal, has been pretty clearly demonstrated. Our own case, and it would seem to us that of Lorenz as well, shows that the same alarming symptoms may follow the use of salvarsanized serum.

We use Lange's colloidal gold test as a routine procedure in connection with all our examinations of the cerebrospinal fluid. We believe it has a marked corroborative value. We have found this reaction in paresis and tabes to be definite and characteristic, particularly so in paresis. A positive reaction has taken place in all of our tabetics. A case of tabes, in a professional man with no mental symptoms whatever, gave the curve of paresis; after the serobiologic findings became practically normal this curve remained unchanged. In none of our paretics has it undergone any modification, notwithstanding marked serologic improvement. According to Miller and Levy, the colloidal gold reaction is inconstant in secondary and tertiary syphilis, the positive reactions observed in tabes and cerebrospinal syphilis are not characteristic, but they believe that the paretic curve is "sufficiently constant" to justify its use as an aid in the differentiation of this disease from those with which it might be confused.

CONCLUSIONS

1. Clinical improvement and serobiologic reduction usually go hand in hand.

2. The report of cases without their associated laboratory reactions is unscientific and valueless.

3. The intraspinal use of salvarsanized serum, as conceived and elaborated by Swift and Ellis, is a notable advance in the therapy of syphilitic affections of the central nervous system; it furnishes the one avenue of approach for spirillicidal drugs to the otherwise inaccessible spirochetes.

4. It is a safe procedure in the hands of trained and properly equipped men. Whether it will bear the final test of efficiency, namely, cause pleocytosis, globulin excess and a positive Wassermann in the blood-serum and spinal fluid permanently to disappear, is yet to be demonstrated.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. PILSBURY AND DRS. RIGGS AND HAMMES

DR. CHARLES R. BALL, St. Paul: We frequently encounter the statement that salvarsan, as well as mercury, does not penetrate the meninges or get by the choroid plexus. This statement seems to me to be a rather inconsistent one. We know that a large number of deaths have been caused by an encephalitis hemorrhagica, which has followed an intravenous injection of salvarsan, and certainly the salvarsan must have passed through the meninges in order to have produced this severe effect in the cortex of the brain. We are further advised by all of the authorities on salvarsan administration that in cases of cervical myelitis or when a lesion exists in the region of the medulla we must be exceedingly cautious in this administration, otherwise we will get the Herxheimer reaction in the tissues, and death by pressure on vital centers. Recently, after a number of intravenous injections, salvarsan has, also, been regularly detected in the spinal fluid. The amount of salvarsan in the spinal fluid would seem to depend on the intensity with which it was administered intravenously or otherwise. The method of administration of salvarsan is in an extremely experimental stage. The almost infinitesimal quantities which we are able to introduce intraspinally would scarcely seem to be of any great value. If we stop to think we must realize that the blood supplies all of the living tissues in the body; when for any reason this supply is shut off from any part, that part dies. Logically it must follow that any medicament introduced directly into the blood will go wherever the blood circulates. In the working out of our therapy, we should not neglect to use common sense along with our scientific endeavor.

DR. G. WILSE ROBINSON, Kansas City, Mo.: We have been following a policy of "watchful waiting" for a great many years, so far as paresis and tabes are concerned, and the result has been that we have watched our patients until hope was gone. No line of treatment previously used has apparently been of benefit, and I believe that this method of treatment does offer some measure of relief. I have been using it for some time, having made perhaps one hundred injections and treated approximately a dozen cases. Thus far I have had no bad results excepting an occasional headache. In one of the cases I finished my series of injections and the patient, after returning to his home, had a considerable number of convulsions. His wife reported to me that he had convulsions every thirty minutes for twenty-four hours. Later he returned and was under my observation for a considerable time, but apparently his mental condition was all right. He formerly had an Argyll Robertson pupil. His pupil reacted to light, the consensual reflex had recurred, physically and mentally he was apparently well, and his wife has reported that he has since continued well. The reports that we are getting on the results of this method of treatment are, I think, encouraging, and if it offers any hope to a paretic we should use it. If we are careful in our technic there is, I believe, practically no danger.

DR. HENRY F. STOLL, Hartford, Conn.: One case which I have had under observation for a year presents a number of interesting points. In the first place, the patient had what was considered excellent treatment at the time of his initial lesion fifteen years ago, namely, mercury by mouth for two and a half years, and he felt perfectly well. Seven years ago he developed locomotor ataxia, and at the time I saw him he had marked tremor of the tongue and facial muscles and would hesitate a number of seconds before speaking, suggesting bulbar involvement. After his first injection of salvarsanized serum by the Swift-Ellis method he had very severe leg pains. He was given codein and phenacetin, without any relief and in the early evening morphin 1/6 grain was administered hypodermatically. I was called hurriedly at 11 p. m. and when I arrived I thought he was dead. I never saw a man so near death recover. He had ceased breathing, but still had a fair pulse. Lumbar puncture was done, without relief. After working over him some time, respiration began, but he had to be "reminded" to breathe every few minutes all night. I supposed he had had an acute bulbar paralysis from the treatment, but Dr. Ellis drew my attention to an article by Dr. Hoover with regard to a point which does not seem to be fully appreciated: that is, that tabetics are very bad subjects for morphin. Dr. Ellis felt sure this was a case of morphin poisoning. The patient was an intelligent man and realized what the outcome of his case would be if untreated, so, at the end of six weeks, treatments were resumed. As a positive Wassermann in blood and spinal fluid persisted, I decided to change from neosalvarsan to salvarsan on Dr. Ellis' advice. The patient had been getting full doses of neosalvarsan (0.9 gm.), but I gave him only a half dose (0.3 gm.) of salvarsan, but a 50 per cent. solution intraspinally. He had very severe pains after the injection, which lasted all night and part of the next day, and in the morning a lumbar puncture showed 4,000 cells to the cubic centimeter. He had a slight Kernig, almost no elevation of temperature, and by night the cells had diminished to 2,000. Cultures were taken and no growth was obtained. He recovered and had no bad after-effects. In all he has received sixteen intravenous and fourteen intraspinous treatments, but both the blood and spinal-fluid Wassermann are as strong as when treatment was instituted. Clinically, there is but little improvement. After the first few treatments he improved a great deal, but he lost ground, which he has not regained, as the result of an enteritis from a mercurial injection.

DR. R. HARVEY COOK, Oxford, O.: I have used intraspinal injections in a number of paretic patients. One feature has not been mentioned in the discussion which I will bring out by citing a case. We know that by the old method, by iodid and mercury, there never was a case of true paresis cured. Now, if there is one case in ten thousand that will be cured or has been cured by injection of salvarsan, it has, in a way, paid for the trouble that has been gone through. We know that there can be very little injury from injection of salvarsan if the blood-pressure is watched, a precaution which should be taken in every intraspinal injection. In paretic patients it is simply an open question whether the salvarsan can reach the brain when injected into the spine. That is a technical point, however, which need not be taken up. I had two cases; one in a doctor whose wife was also a physician and who would not consent to the injection of salvarsan. The other patient received salvarsan and made no improvement whatever, although the Wassermann became negative both in the serum and spinal fluid. The cell-count was reduced to a minimum, but the patient showed no mental improvement. The physician who received no treatment improved remarkably. He was able to go home, resume his practice, and actually did several surgical operations. The improvement was so great that it was insisted that I give a written statement that my diagnosis was wrong. I stood pat, and after almost a year a complete break occurred and the patient went in a hurry. Had it been the other way, the patient who did not receive treatment showing no improvement while the other patient did improve, I would have reported a wonderful recovery had I reported within the year. A factor we should take into consideration in tabetic and paretic cases is that the spirochete may not be actually killed, but sterilized, and thus after a long period of time be able to do damage; but even in such a case we are warranted in giving the treatment, as the danger is minimum.

DR. FRANK R. STARKEY, Philadelphia: The way in which this subject has been handled shows the element of courage that is coming into the medical profession. The fact that Drs. Riggs, Hammes and Pilsbury are from the West may have something to do with it. In Philadelphia we only accept things that have been handed down to us for generations or that have been imported, and to speak of successfully treating locomotor ataxia is tabooed. A little over two years ago I spoke of obtaining good results in the treatment of tabes, in fact of bringing about symptomatic cures. Some of the local medical fraternity were skeptical, but they will discover that the results that I have obtained cannot by any stretch of the imagination be attributed to incidental remission. More than 90 per cent. of the patients in my cases show improve-

ment, and just as good results have been obtained by others who have followed my method exactly. I predicted that the prognosis and the pathology of locomotor ataxia would have to be rewritten. When I said that, I thought it would be a generation before it would be accomplished, but it is already being done. The fact that cases of tabes can be so successfully treated that their reflexes return and all symptoms disappear is sufficient reason for being encouraged in the treatment of this disease. The statement that the intfaspinal injection of salvarsan and serosalvarsan is more or less of a sportsman-like affair is, I believe, quite true and the patient is always the game. The large mortality and other untoward results that follow from entering the spinal canal, which can only be done in the dark, is sufficient argument against it. The introduction of any foreign substance into this canal is bound to be followed by bad results. I am firmly convinced that the time will soon come when the medical profession will be glad to drop salvarsan.

DR. WILLIAM W. GRAVES, St. Louis: The whole medical world is just now in the business of curing syphilis with salvarsan, but I am not yet convinced of its worth, in any form, as a cure in any period of human syphilis. The lack of criticism in this direction on the part of many medical men seems to me to be a little short of appalling. There is no analogy between syphilis and any other disease, unless it exists in leprosy. No man can say when the syphilitic is cured, whatever the remedy employed. With due appreciation of the efforts of the discoverer of salvarsan, I believe that the idea that we may cure an infection by the introduction of a substance into the human body, which is utterly foreign to the body, is not founded on sound biologic principles. At most, such substances are remedies acting, perhaps, by stimulating, temporarily, the resistance of the organism, and not as sterilizers. Salvarsan does not sterilize the human organism of spirochetes.

This lack of criticism is indicated when everything favorable that occurs following the use of salvarsan, at any period of the disease, is put down as evidence of its worth. In our enthusiasm we are apt to forget that exacerbations and remissions characterize the syphilitic infection throughout its course, and we lose our critical sense when we forget the natural course of the disease, and consider the disappearance of symptoms in syphilitics as evidence of cures, after using salvarsan or any other remedy. There is much evidence indicating that salvarsan takes away from the individual a part of his fighting chance against syphilis. If this is true, then we may at this time predict an epidemic-like increase in paresis and tabes and other nerve manifestations during the next ten or fifteen years. Finger and others have shown that something like four times as many cases of early nerve syphilis occur after the use of salvarsan as occurred under the old methods of treatment. Either the nervous system has suddenly become four times more vulnerable to the virus of syphilis or else it has been made so by salvarsan. Many cases of paresis run a rapid course to a fatal termination after salvarsan, as indicated in Dr. Pilsbury's paper, and recently emphasized by A. Myerson and several others. Now, the man who is a paretic, or has other nerve manifestations of syphilis, is the individual who has a poor tolerance for, or a lessened resistance to, the virus; therefore, if salvarsan lessens the fighting chance of the paretic, it is reasonable to assume that it may do so in the individual who is a syphilitic, though not a paretic. I hesitate to use salvarsan in any form, because it does not seem to me to be rational therapy in the treatment of syphilis, and because of the evidence existing in support of the idea that in the cases in which it seems to do temporary good, it may do ultimate harm, by lessening the individual's fighting chance against the syphilitic infection.

DR. C. R. WOODSON, St. Joseph, Mo.: I am skeptical if not a doubting Thomas with regard to the curability of tabes and paresis with salvarsan. During seventeen years I have had an extensive experience in state hospital work in an institution of 1,500 patients, the majority of whom come from two of the largest cities of our state. I have seen many paretics improve without treatment, go home, and pass some of the most careful examiners for life insurance companies, some of them to stay out a year or two years, sometimes two and one-half or three years, without any treatment except the ordinary institutional treatment of large hospitals for the insane. There was an arrest in development of the disease, an ability to resist, that for some reason caused those patients to improve. Possibly this marked improvement that they speak of is like the improvement in some of the cases I have seen, and every man who has been connected with state hospital work has had the same experience. I hope that something can come of this salvarsan treatment. Unless something does come of that, I am frank to say that I do not believe anything will do any good except, as in the past, good care and treatment. It is a question whether or not that is humane, although it prolongs life. I almost always say to friends of my patients when they ask how long the patient will live, "Sometimes, fortunately, they die in the first stages, but it is far too often that they do not." I hope that the gentlemen who are engaged in this special line of employing salvarsan will continue and I hope for results, but still I am skeptical.

DR. GEORGE P. SANBORN, Boston: I will give some facts concerning the Swift-Ellis treatment as I have applied it in thirty-eight cases of tabes and twelve cases of paresis. Some of these cases were in private practice but the majority were on the Neurologic Service of the Boston City Hospital. The number of injections given in this group of cases is 273. The period of treatment has varied from one month to eighteen months. The interval between intradural injections has varied according to circumstances; in tabes, an interval of two or three weeks, or as soon as the patient has recovered from any unpleasant effects of the last injection; in paresis the urgency of the case is considered, and the injections are given in as rapid sequence as possible. The reactions after intradural injections in paresis have not been so severe or so prostrating as in tabes, hence the intervals were made shorter, without untoward results. One paretic received twelve intradural injections in one hundred thirty-two days; had six weeks rest, and was then given six more injections in fifty-eight days. The reactions in paresis consist generally of little else than a headache. All patients are kept in bed for at least twenty-four hours after each injection.

In both tabes and paresis, I believe the least number of intradural injections to be recommended is twelve. I have not yet seen a case in which normal serologic conditions in conjunction with satisfactory clinical conditions were obtained even with this number of injections. Practically invariably, however, there is definite serologic and clinical improvement. I consider a series of twelve injections a unit, and after a suitable rest, if there are no contra-indications, a second unit should be started. In order to demonstrate the changes which might occur in the spinal fluid after treatment, the Wassermann test, cell-count and globulin test, have been carried out on each spinal fluid at the time of injection. The average drop in cell-count in all cases after the first intradural injection was 54 per cent. The average drop in cell-count in all cases after four or five injections was 74 per cent. In other words, all cell-counts at this time became normal. The Wassermann test became negative in no cases, though in a number it became less strongly positive.

The globulin was less readily affected than the cell-count, but showed tendency to become less strongly positive after a few injections, and in a small number of cases became practically negative. Clinical improvement in all cases of tabes and in early paresis is perfectly definite, but this is left to the neurologist to discuss. There have been no deaths in this group of cases. For the past six months salvarsan has been used exclusively. In the early cases neosalvarsan was used. Febrile reactions amounting to from 1 to 3 degrees occurred commonly after intradural injection in the early cases. The use of freshly distilled water with which to prepare salt solution used in dilution of the serum has rendered febrile reaction a rare occurrence.

DR. C. C. WHOLEY, Pittsburgh: I too, have considerable respect for the spirochete, but it manifests itself differently from the respect which Dr. Graves has for it. I certainly would not stand aside and refuse to interfere with the inroads of this organism when it produces the terrible results which he describes. It is natural that there should be a great many differences of opinion concerning the effect of salvarsan at this early stage of its use. We are treating a great many types of the disease and are recognizing it more and more in its early stages, but there are many things we have yet to discover in the way of differentiation between the particular kinds of treatment and ways in which they are to be used for the different types of the disease. It may be that we will find that there are certain types which will be best treated by adhering entirely to the intravenous method. There are other types which I am sure, judging from reports that have come in and from an experience with about twenty-five cases that I have had, will have to be treated by the combined method of Swift and Ellis, and others will have to be varied with the help of mercury and the iodids. I have used the Swift-Ellis treatment in about twenty-four cases, and the injections have varied from two to eight in each case. The effect on the spinal fluid has been similar to that mentioned by the last speaker—the reduction of the cells, etc. They have always been reduced more than 50 per cent. after the first injection. I do not recall precisely the manner in which they have fallen after that. From a clinical point of view, the improvements really have, in some cases, been rather striking. A man who was having most intense abdominal crises and was in a state of collapse from inability to retain food, in twenty-four hours after injection was eating a good meal and feeling comfortable. Such things encourage us to continue the use of a drug that will produce such tremendous results. A young man came to me with a chancre of two weeks standing. The blood-Wassermann was positive, we found spirochetes in the scraping from the chancre. He was given a dose of salvarsan intravenously. That was three years ago, and repeated examinations of his blood and one of spinal fluid have given negative results. That is the only case in my experience in which we can say that there has been a complete sterilization with one injection.

DR. ERNEST M. HAMMES, St. Paul: With reference to the question about using heterogenous salvarsanized serum on other patients, we have had little experience. We have used it in two cases without definite results. I did not want to give the impression that we were curing our tabetics and paretics. I do not see how any man could use the word cure in any case of paresis, even if he has a complete remission, because we all know that without treatment, remissions of from two, three, ten, fifteen and even twenty years' duration has occurred. This line of treatment, however, will give not only symptomatic relief, but will bring about serobiologic improvement quicker and better than anything else I know of.

DR. L. P. PILSBURY, Lincoln, Neb.: My results would not indicate any decided difference in the effects produced by the autoserum and serum from other patients; in general they do not strike me as being particularly favorable. I have, of course, dealt only with paresis; not at all in this series with tabes or with cerebrospinal lues. I do not assume that the technic has been perfect, but it has been careful. I am sorry that in some cases bad results have followed. I do not know exactly to what extent they were dependent on the intraspinous administration. In the case of one man, however, I feel that his death was due to salvarsan. On certain occasions he showed marked muscular weakness, fainting the first time I gave him a physical examination. He had attacks of partial syncope after each intravenous administration of salvarsan, and died about six hours after the first intraspinal injection. I think death was due to the toxic action of salvarsan. I wish to utter a word of caution on the use of a serum containing much dissolved hemoglobin. It is intensely irritating, and although I used it on one occasion I never shall do so again.

JUVENILE PSYCHOSIS

REPORT OF A CASE *

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The literature on the subject of juvenile psychosis is exceedingly scant, but from the best information available, it would seem that the condition is regarded to be relatively rare. Statistics quoted by Spitzka indicate that one in 70,684 children annually lose their reason.

Personally, I am inclined to believe that it is a very much more prevalent disorder than is usually conceded. I am quite sure that not infrequently a definite psychosis has developed in childhood which was diagnosed by an inexperienced observer as an attack of "nervous exhaustion," "feeble-mindedness" or some kindred malady.

In tracing the medical histories of adult mental patients, I have noted, in not a few instances, that the individual in question had in early youth suffered a similar attack, though of a much milder nature, and I have, on careful inqury, elicited the interesting information that the former disturbance was characterized by unmistakable mental manifestations.

During the past ten years, I have had under observation seven cases of juvenile psychosis, and I am familar with three others which occurred in the practice of medical confrères in Cleveland. One of these patients in particular became so unmanageable that the condition finally was made the subject of a probate court hearing. The little patient, a lad aged 14, was committed to the observation department of the Cleveland City Hospital, and I understand has made a slow, though satisfactory recovery.

Many superintendents of state hospitals, to whom I have spoken in this regard, admitted having treated or examined insane children, but most of these cases are unknown to medical literature.

Furthermore, I find in the eleventh volume of the census of England and Wales for 1911, which has just been issued, that the largest percentage increase in the insanity-rate occurred in the case of children under 15 years of age.

It therefore seems to me that the number of children who lose their reason is much larger than the perusal of modern statistics would indicate, owing to the fact that a great percentage of cases are not reported.

Insanity of childhood may occur in very young infants, if we credit the case recorded by Greeding of a child that was a raving maniac at birth. Sachs, however, intimates that this story should be taken with a grain of salt, and I dare say that most of us entertain the same impression.

Attacks of acute mania were observed by Rush in a child of 2 years; by Liebers in a boy aged 5, and Sinkler noted a similar condition in a child of 3 years. Paul Rasmus reported an acute psychosis in a child of 1 year and 9 months. In my experience, it is most commonly encountered between the ages of 10 and 16.

The symptomatology of juvenile psychosis apparently does not differ much from the condition occurring in adult life. In early years susceptible children may become victims of hallucinations, as their sense impressions are deep and lasting. But the youthful

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mind cannot ordinarily construct fixed and systematized delusive conceptions such as we find in the adult, because the child's knowledge does not extend beyond his limited experience, and the large and complicated problems of life are unknown to him.

In all the cases that have been reported, a faulty inheritance stands out as the most potent cause. In the acquired conditions, traumatism of the skull and intellectual overpressure are accorded first place. In my seven cases, four were the offspring of pronounced psychopathic antecedents. Two were the descendants of neuropathic stock, but their mental downfall seemed to be closely related to a severe cranial insult. At all events, the psychosis in both instances followed directly after a severe head injury. In one, the antecedent history, so far as could be ascertained, was negative, but shortly after an attack of diphtheria an acute mental disorder developed. Of these patients, the youngest was 11 and the oldest 16 years of age. Four were boys; three were girls.

Meningitis occurring in early youth, profound emotional strains, fatigue, acute infectious diseases, depraved home surroundings, inadequate nutrition, overstudy at school, cruelty, religious excitement and chorea are elements which must be reckoned with in the etiology of these interesting conditions. One of my patients whose affliction first appeared at the age of 13 is now an inmate of an Ohio state hospital, his case being classified as dementia praecox. Another case was that of a girl aged 14 who developed a definite psychosis during an attack of chorea. The condition ended fatally.

Masturbation can hardly be termed a true causative factor, but I am fully convinced that when practiced to excess it does exert a most baneful influence on the mentality of sensitive youths and is, indeed, the means oftentimes of precipitating states of remorse, depression and timidity which are at least antagonistic to full mental vigor.

I am frank to say that in my judgment the significance of depraved habits and other abnormal tendencies occurring among children is not receiving the attention it deserves. The voluntary appeals of several otherwise promising boys—and girls too, for that matter—who found themselves in the throes of uncontrollable, vicious practices, from which they earnestly wished to escape, has frequently set me thinking. Prudery more than anything else has prompted many physicians to side-track or underestimate these faults, but there is no denying the fact that unnatural habits are demoralizing to psychic health, and are very apt to induce a state of fatigue which, after all, is the first step taken by the nervously unstable toward mental disorder.

The case which I have chosen for the subject of my thesis concerns a young lad, aged 11, who resided in a village suburban to Cleveland. May 10, 1911, I was asked to visit him, and the following information was obtained:

Family History.—The father was a robust man, well-developed, and claimed always to have enjoyed good health. By occupation he was a railway ticket-agent. His parents were still living and well. His only brother for many years had been periodically addicted to the excessive use of inebriating beverages. In 1909, he took a "cure," and since that time he has led a strictly temperate life.

The mother was a rather puny woman, of small frame and stature. From her conduct and conversation, I at once gained the impression that she was at least eccentric, and this presumption was afterward confirmed by relatives and friends whom I met. She nevertheless regarded herself as well and stated that both of her parents were living and in good health. They resided on a farm in the central part of Ohio. Her father, she said, was active, and working every day. Her mother, however, was known to be peculiar, difficult to get along with, and at the age of 33, was confined for several weeks in a private sanatorium for a mental disorder. Since the advent of the menopause, eleven years ago, she has suffered from recurrent attacks of a maniacal character. For many years she has been actually morbid on religious subjects and has been known to pray for hours. She was the mother of four children, three of whom died at an early age. One succumbed to pneumonia, another to typhoid fever and the other to meningitis.

Personal History.—My little patient was born at full term, the delivery being normal. No instruments were used. During pregnancy, the mother enjoyed the best of health, and was not upset by any undue emotional disturbance. To quote her own words, she was particularly proud and happy at the thought of becoming a mother. As a babe, the patient was robust, and thrived on his mother's nourishment. At the age of 11 months be began to walk and to talk when 1 year old. He was regarded a bright and mentally alert youngster. The period of teething was passed uneventfully, but at the age of 5 years he contracted a lobar pneumonia of the right lung, from which he made a good recovery.

When 7 years of age, he started to school and progressed normally. His teacher, however, had frequently commented on his scrupulosity and hypersensitiveness. He was not quarrelsome, but occasionally exhibited traits of stubbornness, and was easily offended. The usual sports appealed to him but he seemed to hold aloof from the more vigorous, though commonplace contests of youth.

On the whole, he was of the affable type, but not always the obedient and respectful boy his parents had hoped him to be. As he grew older, he became subject to emotional variations. At times, he was actually hateful, unreasonable and on several instances his attitude toward his parents was that of defiance. Then the storm would abate, and a more affectionate, penitent and winsome little fellow would be difficult to find.

The mother remarked that she had in no manner pampered him, but on the contrary, had aimed to develop in him manliness and strength. She voluntarily added that perhaps she had been overzealous in his religious training; that most of the story-books she had given him were of a biblical nature, and that during the past year or so, she had thought that her teachings in this respect were having a most unfavorable effect on him. Many nights, she said, he had been awakened by terrifying dreams, all of which were centered around the religious stories she had told him, or of which he had read. The father, on the other hand, was religiously indifferent, and frequently rebuked his wife in the presence of the boy for what he termed "religious slush." He desired, he said, that his child should have a proper Christian training; that religious matters should be imparted to him calmly, rationally and practically, for he saw danger in the emotional and mystic side of the subject. In this regard I quite agreed with him, as it is well known that overreligious training of the mentally susceptible, or those possessing strong, innate religious instincts, is very apt to end disastrously. Suffice it to say that the parents were at constant variance with each other, and thereby created an environment which was not conducive to the best interests of this mentally unstable youth.

In January, 1911, the patient complained of severe frontal headaches, was sleepless and did not eat well. An optician was consulted who prescribed glasses, but no relief followed. Finally, the family physician took charge of the case and the little fellow gradually returned to what the parents thought was normal. In March, 1911, the family for the first time became concerned as to his mental condition, having noted a decided change in his personality. He lost his former aggressiveness and grew surly; did not wish to go to school and would not attempt to prepare his lessons. For a period of two weeks he remained at home; was wholly indifferent to

his surroundings and would not acknowledge the sympathetic solicitation of his parents.

One afternoon, the boy accompanied his father on a jaunt in the woods near their home. For a while everything went well. Suddenly, they heard a strange noise which frightened the boy and he began to weep and clung to his father with all the strength that was in him. Finally, they started homeward, but the terror-stricken youngster was intensely on the alert, and kept looking in all directions. Near the edge of the woods they approached a large tree which the boy refused to pass. The father endeavored to convince him that his suspicions were ungrounded, and that he was safe from all harm. The boy insisted that some one was watching them from behind the tree. Nothing would do but that they should walk in another direction, so they emerged from the woods by a circuitous route. As their home loomed in sight, the lad started to run and when he reached his mother he was completely exhausted.

The family physician, unable to elicit a physical explanation for the boy's distressing condition, proceeded to correct what he termed a toxemia arising from the long-standing gastric and intestinal torbidity. In this connection, it may be said that since infancy this patient was troubled with a persistent and rebellious constipation.

May 10, 1911, when I entered the home, the lad was not approachable, and ran into an adjoining room where he hid himself. He was fearful that I would harm him, and he repeatedly besought his father to take me away. Gradually, I drew near to him, but he persisted in taking shelter behind his father. Finally, he exclaimed that he was not sick, and would not take medicine because he did not need it. A physical investigation was quite out of the question, and none was attempted. I succeeded, however, in obtaining a sufficient insight into his condition and its needs, to realize that, first of all, a new environment should be sought and his case placed in the hands of strangers, preferably, in a hospital. Before I departed, it was agreed that he be taken to Cleveland, to the home of a widowed aunt. A sedative was prescribed, there being no bathing facilities in the home. May 19, 1911, he reached Cleveland, after a short but troublesome journey, and it was necessary actually to drag the little fellow from the train. He was suspicious and fearful of everything he saw or heard.

Immediately I placed a competent nurse in charge, who faithfully carried out a plan of prolonged hot packs, to which he nobly responded. His psychomotor unrest slowly abated and he remained quietly in bed but had little, if anything, to say.

A careful physical examination was accomplished, but no objective abnormality was discovered. He was an exceedingly well-developed youngster, and adequately nourished. No deformities or anatomic stigmata were found. His heart, while excitable in action, was not structurally affected; pulse-rate averaged 90 per minute, and the blood-pressure measured 105 mm. in both arms. The lungs were clear; respiration full and unembarrassed. Nothing noteworthy was found in the liver, stomach or intestinal tract, other than the constipation heretofore referred to. The tongue was still slightly coated and the breath somewhat fetid. No tympanitis prevailed; no rigidity of the abdominal musculature was elicited and no pain or tenderness was complained of. Since his arrival in Cleveland, saline cathartics were used daily, and on one occasion a high enema was resorted to. The urinalysis was negative, with the exception of a heavy precipitate of phosphates. The reflexes, both deep and superficial, responded sharply but would not be considered exaggerated. Surface sensibility over the entire body was well preserved in all of its qualities.

The pupils were widely dilated, but reacted promptly to light and distance. The ophthalmoscopic examination was negative. The senses of taste, smell, vision and hearing were in no wise impaired. The grasp of his hands was strong, and the power of both arms and both lower limbs was vigorous for one of his years.

He had control of all bodily movements, and no incoordination, spasticity, paresis, paralysis, clonus, Rombergism, Babinski phenomena, or other indications of structural nerve disease were detected.

On the fifth day, May 24, 1911, he entered into a state of pronounced confusion, although I was inclined to believe he was cognizant of much that was going on about him. He totally ignored interrogations; refused to take nourishment and tightly clenched his teeth when a glass of milk was offered him. For hours he would lie almost motionless; would stare into space and apparently was in a state of negativism. We tolerated this condition for forty-eight hours, during which time not a drop of water or liquid food crossed his lips. His bowels were evacuated by enema, and it was necessary to catheterize him. With considerable difficulty he was "tubed" night and morning for three days, after which he reluctantly consented to take his nourishment. This, however, was a tedious process, as he accepted only a spoonful at a time, and each meal consumed almost an hour. Fortunately, he slept moderately well, and was not otherwise disturbed. Patient remained in this condition until about June 10, 1911, when he again began to display signs of agitation and unrest. The sounds of passing vehicles, or the noise of some one entering the home would intensely alarm him. He became quite talkative, would scream for help and would often plead for his father to come and protect him. He was extremely suspicious and all manner of hallucinations were constantly before him. He saw animals crawling over his body and was continually expectorating imaginary small fishes and insects from his mouth. The toot of an automobile horn gave rise to the belief that the police had arrived to take him away. He often thought that some enemy was hiding behind the nurse, and he persisted in commanding her to turn around and keep her hands where he could see them.

The condition for a while was pitiable and no manner of persuasion or suggestion was sufficient to convince him that he was safe from all harm. In his sleep he would mumble indistinct sounds and unconsciously would push aside imaginary objects from his face. Frequently, he awakened with a start and would impulsively get up and look under the bed and between the sheets. At times, he would appear almost panic-stricken; the pulse-rate became greatly accelerated and his body was bathed in profuse perspiration.

Prolonged hot packs were again resorted to, and again such means proved their worth. Little by little his agitation and apprehension subsided, and on the 29th day of June, 1911, a marked improvement was noted and he seemed to be, at last, on the road to convalescence. His appetite returned; he relished his meals and finally expressed a wish for some of his mother's favorite dishes. At night-time, he invariably was restless, but hot baths prior to retiring rarely failed to induce from five to eight hours' sleep. Gradually he began to regain his former poise and control, cultivated a strong attachment for his nurse and displayed a lively interest in his surroundings.

Every now and then some strange or unusual noise would alarm him, but he was now amenable to suggestion, and his fears and suspicions were easily allayed. I had a most satisfactory conversation with this little fellow, July 2, 1911, and I was surprised to discover that he had very little insight or recollection of what had happened during his illness, other than the frightful hallucinations which had so tenaciously haunted him. Once I referred to the Bible, and immediately his face flushed and he was quite alarmed. I quickly dropped the subject, realizing that I was trespassing on dangerous ground. July 4, his parents were permitted to visit him and the meeting was indeed a pathetic one. They were admonished to make no reference to his illness, nor were they to refer in any manner to matters pertaining to religion.

From this time on, the patient's progress was rapid. The nurse took him out for short walks daily, and a friend favored him with automobile rides in the parks. He asked for something to read, and was permitted to peruse certain monthly periodicals. At other times, his nurse or aunt would read to him. He finally deserted his room and spent much of his time out of doors, but care was taken to keep him away from influences which might excite him. He went early to bed and slept fairly well. The baths were continued more or less regularly.

July 18, 1911, he accompanied his father to Wisconsin for a month's stay at a friend's farm. This proved most beneficial, and on August 23, 1911, he returned to Cleveland fully recovered and apparently none the worse for his strenuous experience. He talked freely on most subjects and expressed fond anticipation of getting home to see his mother and other relatives. In the meantime, I had much to say to the parents as to the future training of their son whose mental instability was directly due to causes beyond his control. I have since learned that the lad's misfortune was, after all, a blessing in disguise, as a happy family had resulted, and a new environment had been created which ought to have a favorable influence on the boy's future development.

The father has kept me posted in regard to the boy's condition since he left my observation, and with the exception of a mild recurrence of insomnia, he has continued to enjoy good health, both physically and mentally. I understand he returned to school in January, 1912, and has made up many of the studies in which he fell behind. Three months ago, his father wrote me that the lad was now taking a correspondence course in "cartoon drawing," and was becoming quite proficient. It appears that he has shown considerable aptitude for this kind of work, and I have urged them to permit him to continue it, unless indications to the contrary arise.

The recovery in this instance seems to be complete, but what the future holds in store for this young lad, no one can positively foretell. I believe, however, that the parents have learned that their only son, whom they brought into this world handicapped mentally, must be protected from undue strains and stress, and that their conduct and attitude toward him in the future must be very different from what it has been in the past. If they will do their part, and throw the proper safeguards about him until he has fully matured and developed, it is possible that he may escape a recurrence.

We are in the midst of a campaign of preventive medicine, and it would seem that in psychiatric practice preventive measures, to be effectual, cannot be applied any too early.

My object in bringing this report to your attention is to encourage the publication of all cases of insanity in children, in order that we may have reliable statistics to guide us. When this is accomplished, I feel sure that the prevalence of juvenile psychosis will be found to be such as to justify a definite plan of education which will have for its purpose the recognition of danger-signals and the avoidance of such elements which are harmful and destructive to the mental health of developing youth.

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ABSTRACT OF DISCUSSION

Dr. Walter B. Swift, Boston: I recall one case of infantile psychosis that took the form of general paralysis, in which the result of treatment is interesting. A girl about 8 years old had most of the typical signs of paresis, and, as well, a clearly marked state of confusion, with cloudy eyes, drooping expressionless face and inability to think. Her Wassermann was positive. Salvarsan was given and as a result the confusion, facial signs and thinking-power all cleared up. That the organic signs still persisted would lead one to suppose that there were two processes: (1) an old degenerative nerve-lesion and (2) an active process reached by the treatment. The degeneration and the improvement have both persisted since.

Dr. Frank P. Norbury, Springfield, Ill.: A few years ago, I went over my case records and in over 16,000 mental records there were but about twenty-five cases of genuine juvenile psychosis. I excluded the juvenile type of paresis, the constitutional degenerative types, the toxic-delirium cases and the border-line compulsory neuroses as seen in children. I considered only those cases which were almost exclusively manic-depressive or allied states, because I believe we must define these cases clinically as genuine juvenile psychosis. When we study many of our cases, we find early manifestations, even in childhood, that are unrecognized. Especially is this true of the depressive rather than the manic phase. I recall one child who showed the manic phase as early as 6 years of age. I had the patient under observation for some time, even after her recovery and return to her home. Eight years have elapsed without recurrence. I now have two depressive cases under observation, both girls and being cared for in their respective homes. In one, aged 11, the question of differential diagnosis is between dementia praecox and an aberrant form of depression. The age of the other patient is 13. The case suggests an organic basis, possibly involvement of the hypophysis and yet on close analysis it would seem also to suggest an aberrant form of depression. Many children and also adult patients have not been studied from the beginning of their troubles, especially during the years of 6, 8, 11 up to the period of puberty. We can get the history of these cases after the period of puberty, but it is the nascent period of childhood which needs observation for the early manifestations in many cases of manic-depressive psychosis. Few patients at this age ever reach the hospital and comparatively few receive the intelligent and prolonged care they deserve.

Dr. C. R. Woodson, St. Joseph, Mo.: A case came under my observation last year in which the child had a pronounced and typical scarlet fever. About six weeks after the initial symptoms of scarlet fever had appeared, I was called to see the patient. So far as the scarlet fever was concerned the child had gotten along well. There had been no kidney lesions, but the patient was in a state of mental and muscular agitation, with pronounced insomnia. The attending physician was disposed to diagnose the case as one of meningitis. There was no rigidity of the neck muscles, Kernig's sign was absent, there was no fever and had not been for three or four weeks. A lumbar puncture was made, but no fluid was obtained, and afterward the case was diagnosed as polioencephalitis. I did not believe that the condition was polioencephalitis, for there was no paralysis; but the child was extremely agitated. It was during the excessively hot weather that prevailed in the middle west. We did not use hot baths in this case, but kept the child almost constantly in a pack at body temperature by means of two sheets which were simply turned over the child, and which, by means of a small vessel of water, were kept at about the temperature of the patient. Sometimes, toward evening when it was a little cooler, it may have brought the temperature down to 97.5, but not very often. After some two or three weeks the child ceased to be noisy and agitated, began to recognize and want its mother. During the time I saw the patient there were no manifestations due to the scarlet fever, the kidneys and skin functioning well. The process of bathing and packing was kept up for one and one-half months. In two months the child made a good recovery. She was a child of normal intellect and good parentage, but was pronouncedly as exalted and excited as any case of manic depressive insanity that I have seen.

Dr. T. D. Crothers, Hartford, Conn.: In an experience of forty years, in the study of drink and drug neurotics, I have found infantile psychosis, palsies and degenerations very common in the children of such persons. The causes of juvenile psychosis are very often traceable to the toxemias of parents. I have observed that these psychoses change materially at puberty and settle down into some uniform condition, which remains about the same until the climacteric period, when there is an outbreak, and acute and chronic degeneration sets in that never changes. I am inclined to believe that the study of heredity will reveal many of the active and contributing causes of these psychoses. I am not prepared to state what percentage of juvenile psychosis is traceable to this cause, but I am sure the proportion is large.

DR. TOM A. WILLIAMS, Washington, D. C.: Many psychoses exist in children which are overlooked because clinicians are in the habit of ignoring the child's subjective symptoms as expressed in interrogation. I think that is a great error. It is very unwise to put down such a case as one of mere indulgence, allowing it to pass and not analyzing it thoroughly. I believe, however, that quite frequently one will find psychotic conditions in children arising from a purely psychologic source. For instance, a little girl of 11 whom I saw some years ago had become very much disturbed, would not speak to her parents or to other children, and became very violent tempered at times. The whole situation was psychologic in its source and found to be due to the child's idea that she was not loved any longer by her parents. When the condition was rectified in the minds of the parents the girl began at once to improve and returned to school in two weeks. Judging from the frequency with which, in the few cases I have seen, (*Am. Jour. Med. Soc.*, 1912, xi), psychologic factors have been easily found, I should say they must be very abundant, and I should like to appeal to those who see many children that they endeavor to analyze them. For example, last month in Tennessee I saw a child of 6 who was very much disturbed and had been for several years, and yet in that child one could analyze the situation as being due to occurrences which had taken place at the age of 2 and which had discolored the whole life of the child up to the age of 6. This showed itself in the dreams of the child, who, at the age of 6, was capable of extraordinary penetration. Dr. C. L. Greene, chairman of the Section on Practice of Medicine, told me that he was much impressed with the judicial sense of children, and I agree with him.

DR. ALFRED GORDON, Philadelphia: In the cases presented by Dr. Drysdale, Dr. Norbury, or Dr. Woodson, the conditions found are almost identical, which bears out my experience with juvenile psychosis, excluding juvenile paresis and dementia praecox. In psychoses occurring in very young children, I have found almost exclusively, a confusional state. It is true we find some manifestations of mania or of depression, but the cases are essentially those of confusion and delirium. Sometimes we will find a stuporous state, but a state of confusional insanity predominates. I find also that all these cases are acute and temporary, and recover very soon. They are nothing else but confusional states following infectious diseases or any other condition due to an infection of some sort.

DR. J. T. FISHER, Los Angeles: Those who see large numbers of insane people not infrequently find such cases as Dr. Drysdale has cited. I recall seeing six or eight cases at the Psychopathic Hospital in Los Angeles which were very similar. They have excited our curiosity quite a little because of the feeling that we often had that perhaps they were cases of beginning dementia praecox. Some of the patients got well, however, and some of them went into a state which required their being put in a state institution. I see no particular reason why a child should not develop a psychosis as well as an adult, and I am a little surprised to note, in a series of several thousand cases, that we have not had more cases of juvenile psychosis. I do not feel that the cases spoken of by Dr. Crothers necessarily come from alcoholism in the parents. I think that the psychoses of children may result from the same causes as do cases in adults.

DR. H. H. DRYSDALE, Cleveland: Dr. Swift refers to a case of paresis in a child. My experience with this comparatively rare condition is limited to one case which presented the cardinal physical manifestations of the disease. The Wassermann reaction was positive. Mentally this patient expressed no delusions, but on the contrary was stupid, confused and apathetic. Dr. Norbury brings out an extremely instructive point when he refers to the early signs of mental alienation appearing during childhood. If physicians were more alert in recognizing, in children, certain factors which are antagonistic to normal mental development, many a psychosis would undoubtedly be prevented. Viciousness, irritability, lack of control, temper so-called, etc., are often forerunners of mental disaster. The modern treatment of mind disorder is prophylactic and childhood offers a fruitful field for its proper application. Dr. Woodson refers to the efficacy of hydrotherapy in these conditions. I believe that this is the only treatment. Hot and cold packs will suffice in most cases. Dr. Crothers states that a morbid inheritance is the chief etiologic factor in the psychoses of childhood. It is true, of course, that generally we do find a definite psychopathic taint. On the other hand one of my patients, whose antecedent history was excellent, developed a serious mental disturbance at the age of 13 and is now chronically insane. Dr. Williams refers to the psychogenetic origin of the juvenile psychoses. There can be little doubt but that such is the case, in a large number of instances, not only in the psychoses, but also in the psychoneuroses. When I first saw this lad he was so agitated and disturbed that a psychanalysis was quite out of the question. Should this patient suffer a recurrence and come under my observation again I shall attempt to discover a psychic explanation for his affliction.

BERIBERI

J. M. LITTLE, JR., M.D.
ST. ANTHONY, N. F.

The fact that hens, if fed exclusively on white flour, develop a staggering gait and die with paralysis is known to the natives of Newfoundland and Labrador. It is the custom in North Newfoundland and Labrador, in winter, for the natives to take their hens into their cabins, and to keep them in small coops in the living room. Consequently the natives have a good chance to become acquainted with polyneuritis gallinarum. They say that unless some food other than white bread is given, the hens "get leery and give up" (become dizzy and die).

In THE JOURNAL of the American Medical Association for June 29, 1912, I published a short paper giving the clinical facts that warranted the assumption that beriberi is caused by white flour as well as by polished rice. The fact that beriberi seemed common here, together with the facts as already stated about the hens and the knowledge of the work being done on beriberi in rice-eating countries, led me to wish to repeat the experiments being made with rice, but to use white flour instead. It seemed impossible to get fowls and guinea-pigs for experimental purposes at St. Anthony. Therefore, I decided to do the experiments where the facilities were better. Mr. W. Richard Ohler, who at the time was one of my assistants, kindly undertook the work, and was extended the privileges of the laboratories of the Harvard Medical School, with the endorsement and kind cooperation of Professor Rosenau and Professor Wolbach.

The object of this paper is to present some statistics with regard to beriberi in this country, together with such observations and conclusions as I have made, as introductory to the work done by Mr. Ohler.

HISTORY

The first references to beriberi in Newfoundland that I find are in the reports of cases on the Newfoundland Grand Banks by Putnam of Boston and Birge of Provincetown (1898). A large number of the fishermen even on American vessels were Newfoundlanders and in this report we find that there were cases among those making "shore trips." Dr. Grenfell, having encountered the disease in Labrador among those on vessels and those living on shore, made enquiry of Dr. R. A. Brehm, Medical Health Officer of Newfoundland, concerning the incidence of

the disease. Dr. Brehm forwarded a report of thirty-eight cases of well-marked beriberi observed during the two years previous to 1908 by Drs. O. V., and S. S. Smith. There were a few other cases reported. Since 1907 I have constantly seen the disease and, I think, with increasing frequency.

DISTRIBUTION

Beriberi among deep-sea fishermen is uncommon except on vessels in which the standard of diet is low. On American fishing-vessels, even on the halibut catchers which are out for long periods, beriberi is practically unknown; but these vessels are well supplied with foods that we now know prevent beriberi. On Newfoundland vessels in the shore fishery, symptoms of beriberi are common and the severer forms not uncommon. The food on these vessels is practically the same as that of people living ashore and consists continuously of tea and bread, fish, salt meat and occasionally duff with raisins. Some have potatoes and turnips at times. It is on the vessels that go north away from the base of supplies and the land of vegetables, that we find beriberi. Also it is "down north" that we find beriberi among the people living on shore, but always among those who on account of custom and ignorance or their economic and geographical position are, at certain times of the year, almost entirely dependent on white flour for food. So far as I know, the Eskimo and Indian do not have beriberi but they eat plenty of fresh meat.

In the last 5,000 cases seen in the out-patient department of the St. Anthony Hospital, the diagnosis of beriberi has been made 220 times. One hundred and seventy-five of these cases were in men and forty-five in women. Ninety-three patients have been admitted to the hospital. Of these, seventy-five have been men and eighteen women. Of these eighteen women, in one the disease came on during pregnancy and was cured before childbirth; in five it came on suddenly and soon after childbirth. In one case the child died of an unknown cause before admission to the hospital.

The average age among the males was 34 years 4 months; the oldest was 77, the youngest 15. Of the females, the oldest was 57, the youngest 12, and the average age, 28 years 2 months.

There have been six deaths, all in men, all in acute cases from heart-failure or failure of respiration; three each in so-called "wet" and "dry" cases. One woman discharged thoroughly recovered, died at a later date of the same trouble.

The average time from beginning of symptoms to entering hospital was seventeen weeks, but the significance of this figure is very vague, as cases were admitted in all stages of the disease, and it is difficult to determine the time of onset as the preliminary symptoms are so indefinite.

Shortness of breath was a marked feature in 58 cases, and irregularity, increase in dulness on percussion, or murmurs of the heart were noted in 57. Edema was noted in 28 cases. There was paralysis of the lower extremities or some of the leg muscles in 83 cases and 39 of these showed some affection also of the upper extremities. In only three histories in the series were no disturbances of sensation noted and I am inclined to think this is due to omission in the history taking. Forty in the series gave definite history of previous symptoms or attacks.

Only one necropsy was obtained in a man sick a very short time who died of paralysis of the respiratory organs. Besides cloudy swelling of the kidney, the necropsy revealed nothing. The nerves were not examined microscopically.

ETIOLOGY

It is a lately accepted fact that beriberi in its commonest and most well-known form, among rice-eating people, is due to the absence of certain necessary elements in the diet. These have been called "vitamins" (by Funk) and when "milled" rice is used, these vitamins are absent. It is not so generally recognized that in a wheat diet, restricted to "milled" flour the vitamins are also absent and the same disease develops with the same certainty.

Whether or not polyneuritis gallinarum and beriberi are identical, the study of the former (notably the experiments of Frazer and Stanton) has been the means of establishing correct knowledge of the etiology of beriberi. Although in recent text-books beriberi is still classed among the infectious diseases, the infectious theory of the disease has been given up.[1] (Action of recent International Medical Congress in London.)

It may not be possible to include all forms of polyneuritis in one group under the heading "beriberi"; as, for instance, that form so closely associated with malaria and that reported from Brazil, in which we are assured the diet is lacking in no particular. The time has come, however, when a group should be recognized and separated, in which polyneuritis is caused by a deficiency of this particular substance in the diet.

The old idea, still very prevalent, that ship beriberi is a different disease from true beriberi is false. The deficiency in diet, the actual cause, is the same. Moreover, so-called ship beriberi is more frequent on land than on ships. The fact that beriberi arises through a deficiency in rice or flour, or in lack of potatoes[2] makes no difference except in degree, and the maintenance of this old nomenclature obscures the etiology and retards knowledge as to the cause, prevention and treatment of the disease.

Apparently, the multiple neuritides should be classified broadly under three headings: 1, Toxic, which would include that due to alcohol, diphtheria, etc.; 2, "deficiency" or "avitaminic," and 3, cause unknown. In this last, the burden of proof would now seem to rest with those who would exclude a multiple neuritis from Groups 1 and 2. We do not yet know the way in which the lack of these vitamin substances acts or whether the disease caused by their absence is "toxic" or not.

Beriberi is then, one of the deficiency diseases and develops whenever man is, for sufficient time, deprived of certain elements of his diet which have been called "vitamins." These vitamins are present in various foods. In different parts of the world men depend on different foods for this supply. Among rice eaters who use milled rice, and not enough of other forms

1. Motions adopted by the section of Tropical Medicine and Hygiene of the Medical Congress held in London, August, 1914:

"B. (a) That the section is of the opinion that beriberi amongst natives who live principally on rice is brought about by continuous and too exclusive use of rice submitted to a too complete milling, which removes the cortical and subcortical layers of the grain.

"(b) The section urges all authorities charged with the health of native communities to restrain by every means in their power the use of this rice in the dietary of coolies.

"(c) In view of the proved non-infectiousness of beriberi the section suggests that all port and sanitary authorities should abolish foreign quarantine and other destructive measures against the disease."

Section (c) in the above is referred to. I believe this was also adopted by the congress as a whole before they adjourned.

2. Holst, A.: Christiania, Personal Communication.

of food, it develops from the lack of these vitamins which have been removed from the grain. Among wheat eaters who do not eat enough of other forms of foods (for instance meat, potatoes, beans, etc.), beriberi develops when milled wheat, the ordinary fine flour, is used.

Contributory to the development of the disease at any time, may be and often is, some added stress such as exposure, trauma, hardship, chilling, pregnancy, overcrowding, bad hygienic conditions, infection or intercurrent disease. In this respect, beriberi does not differ from many other forms of disease.

In the following paragraphs the symptoms, diagnosis and treatment of the disease beriberi as seen in North Newfoundland and Labrador will be discussed. The observations and conclusions may or may not be in accord with those of other workers in the same field; the point which I wish to make is that they are drawn from personal observations of actual cases as seen in this locality.

SYMPTOMS

The time of onset depends on the length of time a person has been on an insufficient diet and the degree of insufficiency in vitamin of that diet. Endemic, seemingly epidemic, and seasonal outbreaks depend on variation in food-supply. It may occur at any time in a people or in persons among whom nutritional instability is chronic. Among such, what has been called the incomplete or rudimentary form is more common than is recognized. It is better not to regard these patients as showing a separate form of the disease but as suffering from premonitory symptoms and in danger of severer attack.

These premonitory symptoms are due mainly to functional derangement of nerves or groups of nerves, with special susceptibility of the vagus and nerves of the lower extremities. Single or unusual nerves may be first or only involved. For instance, in one young man, the earliest symptom complained of was paralysis of the right sixth nerve. This was followed by double optic neuritis. A decompression operation was done. Later he developed typical beriberi of the dry form which went an ordinary course to complete recovery under proper treatment. But it was found that he had previously had night blindness which up here is so common that he had not thought to mention it. The importance of the peculiar and protein paresthesia as indicating nutritional fault and danger of severer involvement, is not appreciated by the people, as familiarity breeds contempt. Nor is their significance or frequency ordinarily known to the physician. They may be fairly common when the later manifestations of the disease are unknown or unrecognized.

The more advanced stages are well described in the various text-books and do not differ essentially in symptoms from what one would expect from the "regressive changes" in nerves, whether in beriberi or other forms of multiple neuritis.

The clinical course will depend on whether the nerves of the extremities or those to the more vital organs are most affected, and on the extent of the affection. In the dry form there will, almost always, at some stage, be more or less edema of the most affected parts, as is seen in so many forms of peripheral neuritis. It may be very slight and transient. In almost all cases there will also be tachycardia and shortness of breath due to functional involvement of the vagus and pneumogastric or phrenic. If the vagus, pneumogastric or phrenic bears the brunt of the attack, there may be uneasy precordial sensations followed by tachycardia and shortness of breath, followed by the usual signs of broken compensation, as the involvement of the nerve advances beyond the functional stage. This constitutes the "wet" form, and, in rapid onset, the culminative, acute, pernicious or cardiac form. Except when this last is extremely acute, there will almost always be observed some involvement of the extremities.

There are, then, two forms of edema; one primary, due to involvement of the peripheral nerves of the extremities, and another, secondary, due to broken heart compensation following involvement of the vagus. In the most pernicious variety, without edema, the respiratory nerves are probably at fault. Some edema may be due to intercurrent kidney affection.

The disease may be clinically divided in another way into two stages: (1) active, in which there is nutritional fault and nerve involvement is taking place or progressing, with all its various symptoms; (2) passive, in which the patient suffers only from disabilities due to the damage already done to the nerves with resulting changes, and in which there is nutritional sufficiency and no further nerve degeneration taking place. In the forms in which the extremities bear the brunt of the attack, degeneration can go to greater lengths than in the other forms without danger of death or such alarming symptoms. Regeneration of these nerves and their associated muscles is no quicker in this than in other forms of peripheral neuritis with paralysis, and these are the protracted cases.

DIAGNOSIS

The diagnosis is easy in most cases, especially when the disease is common or when there is an outbreak. The important thing is to recognize the premonitory symptoms and atypical forms. The possibility of intercurrent disease must be kept in mind as well as the other deficiency diseases. Whatever the underlying cause of scurvy, and it is probably similar, the two diseases should not be confounded. Whenever there is nerve involvement, as shown by functional or degenerative symptoms, beriberi or avitaminic neuritis should be diagnosed. Some symptoms associated generally with scurvy, are probably rather due to this form of neuritis; such, for instance, as night-blindness, edema of the legs without hemorrhages and perhaps shortness of breath. If involvement of the nerves is kept in mind as the criterion, there will be little difficulty in differentiation, even when the diseases are concomitant, as may be the case.

The well-known toxic causes of neuritis are generally easily eliminated. Postdiphtheritic paralysis sometimes may be difficult to exclude. One young man, who had had in the past the early symptoms of beriberi, who had lately had ulcerated sore throat in which bacterial examination had failed to show diphtheria though there had been diphtheria in the vicinity, came to hospital with signs of bulbar involvement, unable to swallow or chew. There was known to be a case of syphilis in his family and his symptoms rapidly cleared up under large doses of potassium iodid.

Poliomyelitis is differentiated in the same way as other forms of peripheral neuritis and presents no special difficulties. In older patients with ataxic symptoms, the rapidity and mode of onset should be considered and the general course of the trouble. After all, it is only in the atypical cases, those involving

special and unusual groups of nerves, that difficulty arises. In these one should watch for the slightest sign of involvement of the more commonly affected nerves. The clinical course will clear up the difficulties.

PROGNOSIS

This depends on how much damage has been done, to what nerves, in what length of time, and the ability to procure the elements needed in the diet of the patient. The danger is great while the diet is defective, while the nerves to the heart and lungs show most involvement, and when the onset has been rapid. Recovery will be complete if proper diet is instituted and maintained, no vital nerve has been affected sufficiently to cause death, and no other disease carries off the patient. If former habits of diet are resumed, recurrence in aggravated form is probable.

TREATMENT

Whenever an unbalanced diet is used, an attempt should be made to regulate it better. When people depend mainly on bread, whole-wheat flour should be used. Fresh meat, vegetables and other articles should be added when possible. Such foods as beans should be used when fresh meat and vegetables can not be obtained; and attention should be given to the method of cooking so that the preventive substances are not destroyed. Canned goods probably have these destroyed by heat.

A patient with beriberi, whose symptoms have not gone so far as to be immediately dangerous, if put on a diet including fresh meat, whole-wheat bread, beans, peas, macaroni and potatoes, will, within ten days, recover from all functional symptoms. His perfect recovery will depend only on the length of time necessary for the regeneration of the nerves already affected, together with the correction of such pathologic conditions of deformity, wasting, anemia, etc., as have supervened.

Absolute rest in bed is important at first in all cases. During acute attacks, such supportive treatment as is indicated should be instituted, along with the attempt to introduce such food as will supply the lacking elements. When the stomach rebels, milk from mash-fed cows should be used. Digitalis must be used with care. Strychnin and quinin seem indicated by clinical and experimental observation (Cooper). All electric treatment and massage should be delayed until such time as progressive degeneration has ceased.

While the antineuritic substance is curative in minute quantities and has been separated, its preparation is too complicated at present for general use, and the use of proper foods is still the best way. In the severer cases, such a preparation would be life saving. It is to be hoped that in the future, it may be prepared in some stable form capable of distribution.

There is, possibly, a broader significance to the subject of deficiency neuritis than may be apparent to the average practitioner. Beriberi is thought of as a sort of extra disease that he doesn't have to bother with, a sort of tropical disease he will never see. It is easy enough to recognize in its "overforms," such as we see when a diet is obviously one sided. The vaguer symptoms and results may be present when the diet is not so considered. Meat is getting dear, however, and foods are coming to be more and more denatured by modern methods. I do not know whether affections of the nerves are correspondingly on the increase, but the text-books are significantly silent or unenlightening on the etiology of functional and degenerative diseases of the nerves. It may be that the recognition of neuritis as a deficiency disease, due to a one-sided diet in which ordinary white flour is the principle factor, may clear up some previously unexplained cases of functional nerve trouble, neuritis, and trophic disturbance.

The cause of beriberi among rice eaters is an accepted fact. It is not generally recognized among wheat eaters. Because of this fact Mr. Ohler has attempted to repeat with wheat, some of the experiments which have been accepted by the profession as proof in the case of rice. A report of these experiments will be found in the *Journal of Medical Research*.[3] Their full significance remains to be worked out.

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THE PATHOLOGIC AFFINITIES OF BERIBERI AND SCURVY

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INTRODUCTION

During a recent visit to South Africa and Rhodesia with General Gorgas, advantage was taken of the favorable opportunities there for observing scurvy. A number of post mortems were made and some pathologic material collected.

I was struck at the first necropsy by the remarkable appearance of the heart, for it suggested at once the picture seen in a well-marked case of right-sided hypertrophy and dilatation in beriberi.

Since my return, I have examined miscroscopically the vagus and its branches, as well as the heart muscle, in some of the cases, and found degenerative changes of the same type seen in beriberi.

Each necropsy presented the same cardiac lesion, and following up the observations, a number of clinical, pathologic and epidemiologic observations have been made which show family relationships between scurvy, a classical example of a food deficiency cachexia, and beriberi, and also as Watkins-Pitchford[1] pointed out in 1912 with certain other members of the group of dietetic cachexias.

At one extreme is rickets, a type of pure "osteocachexia," to use Watkins-Pitchford's term; at the other extreme a pure "neurocachexia," such as polyneuritis gallinarum. Between these two types are scurvy, infantile scurvy, the experimental scurvy of guinea-pigs, ship beriberi, beriberi (two or more types), infantile beriberi, and epidemic dropsy and neuritis.

The accompanying diagram shows qualitatively the affinities of the differnt types of food deficiency cachexias; and following is a brief diagnosis of the types:

Rickets.—A disease of infants characterized by defective nutrition of the body and diminution of lime salts in growing bones, particularly the ends of the long bones and ribs at the junction of the ribs with cartilage ("rickety rosary" and "craniotabes"). Rapidly repeated pregnancies and suckling a child during preg-

3. Jour. Med. Research, xxxi, No. 2.
1. Watkins-Pitchford: Transvaal Med. Jour., May, 1912.

nancy (according to Osler) seem to be important factors in the production of the disease. It is most common in children fed on condensed milk and food poor in fat and animal proteins (Cheadle).

Infantile Scurvy.—A cachexia of infants or children in which there is profound anemia, subperiosteal, subplural, and other hemorrhages; spontaneous separation of epiphyses from shafts of femur and tibia, and separation of ribs from cartilages, as in extreme cases of scorbutus. The gums, if the teeth have erupted, may be spongy. It is caused by proprietary foods, and there are instances, as in one of my necropsies, of its developing in breast-fed babies.[2]

Scurvy.—A disease occurring among laborers, or soldiers, in barracks and camps, or inmates of asylums, etc., and in times of famine; following the continued consumption of a one-sided or overcooked diet and one free from fresh vegetables. It is characterized by muscular joint subserous and subperiosteal hemorrhages; anemia, gingivitis, necrosis of bones, separation of costal cartilages from ribs in extreme cases, and [right-sided cardiac hypertrophy, dilatation and fatty degeneration, with degeneration of the vagus and its branches (personal observation)]. Certain epidemics display symptoms which disclose affinities with beriberi.

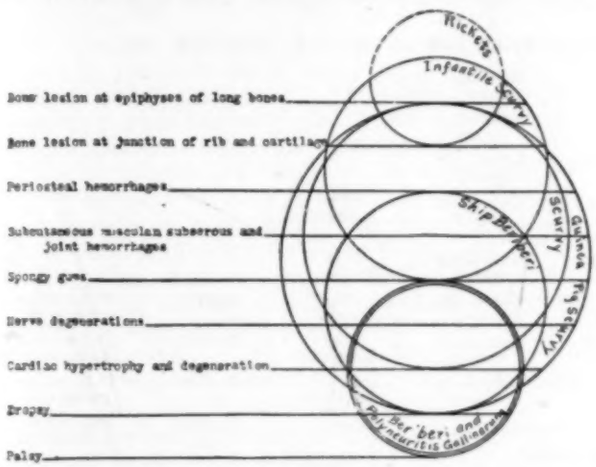

Chart showing affinities of the food deficiency syndromes.

Experimental Scurvy of Guinea-Pigs.[3]—A disease, resembling Barlow's disease, produced in guinea-pigs by feeding a one-sided, or overcooked and unaccustomed diet of various sorts of grain, groats, and bread. There are hemorrhages, muscular, subperiosteal, and subcutaneous, often of the hind legs and ends of the ribs and between rib and cartilage, loose teeth and fragility of bone, and rarely polyneuritis and fatty degeneration of the heart. It is favorably influenced by "antiscorbutics."

Ship Beriberi.—A disease appearing usually on board sailing ships during long voyages, which may be due to eating preserved, dried, or tinned food in the absence of fresh vegetables. Symptoms are: weakness, shortness of breath and "other symptoms of weak heart causing often sudden death from acute paralysis of heart," edema of legs, and other parts of body. In a few cases sore gums, cutaneous and intramuscular hemorrhages, and peripheral neuritis are seen. It often appears in spite of the use of lime juice. Recovery is rapid when fresh food is supplied.

Beriberi.—A disease due to eating exclusively polished rice or other food from which some unidentified principle or "vitamin" is absent. It occurs endemically in certain tropical or subtropical regions and is characterized chiefly by degenerative changes in the peripheral nerves with motor and sensory disturbances, dropsy, right-sided cardiac hypertrophy and dilatation with fatty degeneration. There are undoubtedly several types of this disease such as infantile and asylum beriberi, wet and dry[4] beriberi, and that seen in Brazil (Lovelace)[5] "endemic dropsy," and endemic peripheral neuritis, etc. Dechambre described an epidemic of scurvy as occuring during the Siege of Paris, in which a few cases displayed beriberi symptoms.

Polyneuritis Gallinarum of Eijkman.—A disease produced in birds by feeding overcooked food and wheat flour, etc. Paralytic symptoms rapidly develop with subcutaneous edema, especially of the legs, and fatty degeneration of muscles of the heart; a disease resembling tropical beriberi rather than ship beriberi, neuritis being present more frequently than in ship beriberi.

Table 1 is meant to display the chief pathological features of the different diseases in this group in such manner that the affinities of the group may be seen at a glance.

Funk[6] mentions five groups of symptoms observed in diseases caused by food theoretically deficient in "vitamins":

1. Nerve degeneration with paralysis and contractures.
2. Cardiac: dilatation of right heart, dyspnea, cyanosis, oliguria.
3. Anasarca, hydropericardium, hydrothorax, ascites.
4. Scorbutus with mouth lesions, skin, subperiosteal hemorrhages and bone lesions.
5. Pellagra syndrome, stomatitis, gastro-intestinal lesions, skin erythema and multiple nerve symptoms.

While Funk may be right about the etiology of Groups 1, 2, 3, and 4, it would seem to be unwise to include pellagra in this group, for among other reasons, while pellagra is a disease "occurring in maize-eating countries *par excellence*" the eating of overcooked, undercooked and overmilled, kiln-dried maize in large quantities takes place among negro laborers and natives in South Africa to an enormous extent, for it is frequently their sole article of diet. Yet pellagra is practically unknown among that class.[7] *They do, however, suffer from scurvy.*

THE CARDIAC AND NERVE DEGENERATIONS IN BERIBERI

It it can be shown that scurvy, a typical example of a food deficiency cachexia, possesses certain pathologic features identical with those of beriberi, about which the etiology in the minds of some is as yet undetermined, it will help to establish a place for beriberi among the dietetic cachexias.

It is well known that in beriberi the heart is usually enlarged; the enlargement is especially common on the right side, the right ventricle being usually hyper-

2. It may be noted in passing that both infantile beriberi and infantile scurvy may develop in breast-fed babies.
3. Holst and Frölich: Ztschr. f. Hyg. u. Infektionskrankh., May, 1912.
4. Vedder and Clark: Philippine Jour. Sc., Sec. B, 1912, vii, 423.
5. Lovelace: Peripheral Neuritis in the Amazon Valley, Am. Jour. Trop. Dis., 1913, i, 140; The Etiology of Beriberi, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2134.
6. Funk: München. med. Wchnschr., 1913, No. 47.
7. Swift and Brown: Jour. Trop. Med. and Hyg., June 1, 1914, report six cases of pellagra in eight years at Bloemfontein Asylum.

trophied and dilated, this abnormal size of the right heart being often the only striking feature of the necropsy. There is some fatty myocardial degeneration. These changes are thought to be due to degenerative changes in the vagus and its cardiac branches.

Hypertrophy and dilatation of the right heart is recognized as being due to such mechanical processes as stenosis of the pulmonary artery, reduction of the vascular area of the pulmonary artery, as in emphysema and interstitial pneumonia, valvular lesions on right side, tumors and aneurysms pressing on the pulmonary artery, and adherent pericardium.

In addition to these, this lesion is constantly found in beriberi and the Rand type of scurvy.[8] It is the type known as excentric hypertrophy or hypertrophy and dilatation characterized by thickening of the muscle and an increase in the size of the cavity. It seems to be due to a gradual strain on the right ventricle from loss of vagus innervation.

According to Scheube, Ellis found the average weight of the heart in beriberi in 125 post mortems to be about 13.37 English ounces, or 378 gm., while in 204 other cases it was but 9 ounces, or 254 gm. This increase is due chiefly to the hypertrophy of the right ventricle.

Jojot[9] records ten necropsies in the cardiorespiratory form of disease (beriberi) at Camp Saint Jacques. Symptoms: dyspnea, intense cardiac erethism, extreme anxiety, and sudden death by syncope. Jojot notes the occurrence of hydropericardium, 180 c.c., and cardiac hypertrophy, 310 to 490 gm.

Pekelharing and Winkler,[10] state that "hypertrophy of the right heart is always present and associated with dilatation, sometimes small, sometimes great, and not infrequently enormous." The muscular coat of the heart is often pale. Of 64 necropsies,

5	hearts	weighed	250 to 300	gm.
42	hearts	weighed	300 to 350	gm.
10	hearts	weighed	350 to 400	gm.
7	hearts	weighed	400 to 450	gm.

according to Hamilton Wright.[11]

Observed atrophy in the terminations of the vagal inhibitory fibers in the heart muscle, axonal reaction in the cells of the ambiguous and vagal portion of the combined nuclei in the bulb, together with axonal reaction in the cells of the intrinsic cardiac neuroses, and in cells of the postganglionic accelerator fibers are conclusive evidence that almost the entire cardiac nervous system is affected by the beriberi virus in acute pernicious beriberi.

So extensive a poisoning of both inhibitory and accelerator systems accounts for a large measure of the cardiac symptoms in the latter class of cases. The loss to the heart of the control normally effected through the accelerator and inhibitory systems leaves the organ in practically the same state as the heart of a lower animal experimentally isolated from its guiding nerves.

The rapidity of beat seems to indicate that the inhibitory mechanism is first attacked. Partial exhaustion and dilatation of right heart soon follows. Arhythmia occurs. The right heart fails to empty itself and the pulmonary and venous circulation becomes surcharged. Dilatation of right side increases.

CLINICAL OBSERVATIONS ON SCURVY OF THE RAND TYPE

My first impression of the cases of scurvy in South Africa was that the disease was of an infectious nature, but that rapidly gave way to a confirmed opinion that it was due to dietary errors.

The diet of the negro laborers was certainly one-sided, considering the amount and character of the labor required of them. It consisted, as General Gorgas[12] has pointed out, too largely of carbohydrates. Five to eight feet of rock is no mean task to drill through in a day on a diet composed chiefly of cornmeal. Looking over the dietary, it was seen that the disease apparently had some relation to the following factors: Overmilled corn as the chief article of diet; overcooked corn as well as overboiled food of whatever kind; roasted meat, the natives customary way of cooking, was never supplied; and insufficient and overboiled vegetables.

Cases, too, very definitely came on during a drought and in locations where it was impossible to supply fresh vegetables and fresh meat. Several types would appear. Dr. Peall, of Arcturus, Southern Rhodesia, reported the appearance of neuritis and ataxy with enlarged right heart and edema of tibiae. Thus confirming the observations of Balfour of Khartoum and other African observers in this particular.

An interesting feature of the disease was brought out by ascertaining the incidence and death-rate among different types of natives, for during the year 1913, at one of the mines, the incidence per 1,000 per year was 12.37 among Cape Colony "boys," while it was

TABLE 1.—SHOWING AFFINITIES AND PATHOLOGIC FEATURES OF SCURVY, BERIBERI, ETC.

Bone lesions at epiphyses of long bones	Rickets	Infantile scurvy	*	Guinea-pig scurvy			
Bone lesion at junction of ribs and cartilage	Rickets	Infantile scurvy	Scurvy	Guinea-pig scurvy			
Subperiosteal hemorrhages		Infantile scurvy	Scurvy	Guinea-pig scurvy			
Joint, subserous, subcutaneous and muscle hemorrhages		Infantile scurvy	Scurvy	Guinea-pig scurvy	Ship beriberi		
Spongy gums		Infantile scurvy	Scurvy	Guinea-pig scurvy	Ship beriberi		
Nerve degeneration			Scurvy	Guinea-pig scurvy	Ship beriberi	Beriberi	Polyneuritis gallinarum
Cardiac hypertrophy and degeneration			Scurvy	Guinea-pig scurvy	Ship beriberi	Beriberi	Polyneuritis gallinarum
Dropsy				Guinea-pig scurvy	Ship beriberi	Beriberi	Polyneuritis gallinarum
Palsy						Beriberi	Polyneuritis gallinarum

* May occur during adolescence but probably is not encountered in adults.

8. Buzzard, in Reynolds System of Medicine, 1870, Vol. I, notes cases of scurvy with fatal syncope and attributes it to the muscular structure of heart being weakened by malnutrition. Thus, cardiac syncope is also a feature common to beriberi and scurvy.
9. Jojot: Ann. d'hyg. et de méd. coloniales, 1911, No. 1, p. 88.
10. Pekelharing and Winkler: Beriberi, 1887.
11. Wright: Studies Inst. Med. Research, Federated Malay States, 1903. ii. No. 2.
12. Gorgas, Sanitation on the Rand, THE JOURNAL A. M. A., June 13, 1914, p. 1855.

7.45 among "tropicals," yet the death-rate was only 0.19 per 1,000 per annum among the former, while it was 2.66 among the tropicals, or 14 times as great. The tropical negro therefore gets scurvy in far more serious form. This may be explained from the observation that the scorbutic "tropical boy" had not yet begun to vary the monotomy of his diet by purchase of food at Kaffir stores outside the mine compound.

The clinical cases of scurvy seen varied in severity from those that had only spongy gums and very slight infiltration of calves, to others with severe and extensive hemorrhages of the muscles, joints, and serous membranes, or bone and cartilage lesions. The appearance of the patient was apathetic; many of them had been in bed six to nine weeks. Motion and locomotion were impaired, the recovering cases walked with a slight straddle, but there was no foot drop. The sick ones were either unable to stand or perhaps stood well with one leg, while the other was partly flexed, i. e., the heel elevated, the toes and ball of foot resting on the ground, apparently due to infiltration and atrophy of leg muscles. Their gums were swollen and pouting at the margins, which were bright red and fungating. On pressure, the blood spurted on the adjoining teeth. The muscles of both legs were uniformly, or unequally infiltrated and the overlying skin was smooth and shiny. After the infiltration had subsided, there was atrophy of the calves with wrinkled shiny skin. The knee-jerks in those examined were generally slightly exaggerated in all save one case. In this, the right was normal, the left practically absent. Several cases, on auscultation, disclosed tachycardia as in beriberi.

At Bulawayo, through the kindness of Dr. Eaton, a case was seen in which the gums at the time of examination were negative, the legs and tibiae were also negative, yet the sternum had collapsed, due to separation of the costal cartilages from the ends of the ribs. One could feel the cup-shaped depression in the ends of the ribs. There was also a big hematoma over the left scapula and shoulder.

Doctors at Bulawayo describe a condition known as "big leg," a condition of edema following active exertion, such as marching to the mine, occurring in some cases after three weeks in the detention camp. This is of interest, because undue exercise seems to have been an exciting or accelerating factor in precipitating attacks of beriberi and scurvy, as in soldiers after a march.

Not only has the Rand type of scurvy affiliations with beriberi, in that cardiac degeneration and degeneration of the vagus occur in typical scurvy as well as in beriberi, and by reason of the appearance of beriberi or neuritic features in certain epidemics of scurvy, but Dr. G. P. Turner of Johannesburg has observed that many of the negro miners dying of various diseases, at necropsy disclose slightly edematous calves without any other sign of scurvy or beriberi. Scurvy has definite affiliations with rickets, and infantile scurvy too, for in the case seen at Bulawayo there had been extensive destruction of the chondrocostal junction, with depression of the entire sternum.

Couvy[13] gives an interesting account of an outbreak of beriberi and of scurvy in a garrison of soldiers at Akjoucht (Mauritanie, May-September, 1908). There were 150 natives and eleven Europeans. Beriberi appeared first among the natives; later cases of scurvy appeared among them. The officers, however, during the same period, had only scurvy, with no symptoms of beriberi.

13. Couvy: Ann. d'hyg. et de méd. coloniales, 1911, No. 1, p. 97.

TABLE 2.—DIET AT OUTBREAK OF DISEASE ....

Diet of Native Soldiers	Kilos	Diet of Europeans	Kilos
Rice	0.500	Flour	0.450
Fresh meat	0.500	Fresh meat	0.500
Salt	0.015	Fat	0.020
Sugar		Coffee	0.025
		Sugar	0.030
		Salt	0.010
		Wine, dried beans and preserves	

Among those suffering from beriberi, as well as scurvy, the suppression of rice from their diet and its replacement by other articles was followed by the disappearance of cardiac troubles, asphyxia, pulmonary edema, and subcutaneous edema, but had no effect on the classical lesions of scurvy—spongy gums, muscular pain, and induration of limbs.

This instructive observation of Couvy illustrates the personal racial or idiosyncratic factor of this group of diseases, for, as far as can be ascertained, following the use of meat with one other article of food (polished rice), and associated with excessive consumption of salt[14] (saline spring water), two distinct syndromes appeared among the men who were getting the same ration (native soldiers).

This constitutional, or idiosyncratic, factor in the production of these diseases does not seem to have been sufficiently emphasized and certainly has not yet been explained. For example, a certain exclusive diet will cause scurvy in guinea-pigs, yet the same diet causes polyneuritis in pigeons. On the other hand, a deficient dietary in a tropical African negro mine laborer causes severe scurvy, in a Cape Colony African negro mine laborer, mild scurvy, and in some African negroes a diet that causes scurvy in one set of men causes neuritis in others. Furthermore, an exclusive diet of rice, which usually causes beriberi in man, has caused scurvy in certain instances, for Hölst and Frölich[15] call attention to the fact that "rice which is so often supposed to be the cause of tropical beriberi occasionally has provoked scurvy." Delpech[16] mentions in his article on scurvy in Paris, 1870-71, "a patient who got the disease who for four months had eaten meat only four times; besides this he had nothing but rice." Other scurvy patients, described by Bucquoy[17] had eaten rice or bread almost exclusively.

NOTES ON THE PATHOLOGY OF SCURVY

Three severe cases of scurvy, practically free from complication (one had a little tuberculosis), came to necropsy at one of the hospitals. The anatomic findings were closely similar and may be summarized in a composite anatomic diagnosis:

Hemorrhagic extravasation into muscles of both legs, left forearm and left psoas muscles, involving the muscle fascia between muscles, old and recent.
Subperiosteal hemorrhage, shaft of left femur.
Hemorrhage into left knee joint.
Old subcapsular hemorrhage (knee joint).
Ulcerative gingivitis with hemorrhages.
Separation of mandibular periosteum.
Anemia of all viscera.
Hypertrophy and dilatation of right heart.
Fatty degeneration of musculature of right heart.
Hyperplasia of femur marrow.
Edema of lungs.
Scaly desquamation of both legs.

14. It would be interesting to ascertain experimentally what modification in the syndromes might be induced by adding *excessive amounts of salt* to the vitamin-free diet of animals.
15. Hölst and Frölich: Jour. Hyg., 1907, vii, 667.
16. Delpech: Ann. d'hyg., 1871, xxxv, 295.
17. Bucquoy: Union méd., September-October, 1871.

This is purely a picture of scurvy, without a single beriberic feature save, of course, the cardiac change. The picture presented by the heart in these cases is very striking. It is seen to be enlarged and very pale, but as it is lifted from its bed, the pallor of a yellowish tint is sharply limited to the broad right ventricular wall. The left ventricular wall externally is of good color. This is striking, but becomes accentuated when the heart is sectioned, for the left ventricle is seen to be of normal thickness and capacity, contracted, not dilated, and the muscle of good deep color; while the right ventricular wall is definitely thickened 8 to 10 mm. more or less in thickness, and of a yellowish pallor. The chamber is dilated and the muscle stands stiffly out from the septal wall and does not collapse on it as in a normal heart. This lesion appears to be pathognomic of the Rand type of scurvy and it brings this type of the disease into relation with beriberi and other dietetic cachexias.

An examination of the cardiac muscle and of the vagus nerve and its branches (Marchi preparations) shows that there had been extensive diffuse fatty degeneration of the musculature of the right ventricle, the muscle cells being stippled over with small fat droplets. There are also small areas in which the droplets are larger. The intermuscular stroma contain many extracellular small droplets of fat. The cardiac nerves do not appear to be degenerated. The sections of the vagus at different levels all show considerable degeneration of the fibers. This is different from the finding of Pekelharing and Winkler in beriberi, who state that the nearer one approaches the periphery of the nerves, the greater the nervous degeneration; the nearer one gets to the center, the less distinct it is, and in the great nervous trunks and in the roots no changes are found in beriberi.

It may be urged by some that there is latent beriberi on the Rand and that many of the cases of scurvy overshadow the beriberic symptoms. This can definitely be ruled out, for in all the cases I examined with regard to this point the knee-reflexes were exaggerated, not absent, as in beriberi; there was no anasarca, and no paralysis or extreme general atrophy as in beriberi. Besides, the pathologic material examined was taken from cases which anatomically were uncomplicated scurvy.

Searching the available literature on scurvy for descriptions of this very striking cardiac lesion, it was seen that fatty degeneration had been described, but no one seems to have noted the peculiar features of the cardiac hypertrophy and degeneration of the vagus. This may be accounted for in the following way. From a comparative study of the pathologic features of the various dietetic cachexias it is seen that there is a relationship among them. Scurvy shades off into ship beriberi in one direction and towards rickets in an other.

All outbreaks of scurvy are not alike. Some appear in apparently well-nourished laborers of robust physique, while others appear in conditions of severe starvation as in time of famine, in campaigns, in jails, asylums, etc. In some outbreaks there are very definite beriberic features, in others they are quite absent. We may presume then, that in certain outbreaks, or in certain cases of scurvy, the cardiac hypertrophy and degeneration which I have described may be seen, in others, it may be absent. As a matter of fact, I have seen one well-marked case of asylum scurvy associated with tuberculosis in which the peculiar cardiac hypertrophy was absent. It is likely that cardiac hypertrophy may not occur in scorbutic persons debilitated by starvation and associated chronic disease. Again the type of scurvy seen among tropical negroes on the Rand and in Rhodesia appears to be different from that observed among troops, in jails, asylums, and in time of poverty and famine in that the former does not yield so readily to treatment as the latter is said to do.

CONCLUSIONS

The striking excentric hypertrophy and dilatation of the right heart with extensive fatty degeneration of the same musculature, the left heart remaining apparently normal, and the severe degeneration of the vagus nerve described here from several fatal cases of scurvy from the Rand furnish new and additional facts which show the intimate relationship between scurvy and beriberi as to etiology. The affinities between these two diseases and certain other cachexias lends emphasis to the opinion that they are all the result of the continued use of one-sided and deficient diet.

A COMPARISON BETWEEN THE UROCHROMOGEN AND DIAZO TESTS IN THE PROGNOSIS OF TUBERCULOSIS*

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As a result of personal dissatisfaction with the prognosis of tuberculosis, my attention was drawn to an abstract of an article by Moritz Weiss,[1] in which the prognostic value of Ehrlich's diazo reaction in the urine of tuberculous subjects is emphasized. He also describes a test of greater reliability and simplicity which was evolved from study of the diazo reaction. In the original article Weiss refers to his earlier writings on the subject, which date back to 1906. During seven years' observation he has confirmed the ideas of Koch and others by observing that death invariably followed the persistent presence of the diazo reaction in the urine of the tuberculous. In addition to his own work, Weiss refers to that of Dr. Heflebower, who reported similar results at the United States Government Sanatorium at Fort Bayard, N. M. Dr. Heflebower's article[2] reviews the general literature and mentions Gwerder's use of potassium hypermanganate with the diazo reagent. Heflebower, using the technic of Weiss, carefully compares his test with the diazo and demonstrates the superiority of the former.

Early in his observations, Weiss was puzzled by the occasional absence of the diazo reaction in obviously advanced cases and its frequent disappearance just before death. This led him to suspect that the unknown substance on which the diazo reaction depends was derived from an antecedent which does not give a positive reaction. On adding a 1:1,000 solution of potassium permanganate drop by drop to positive specimens and the reagent combined, he noted that the characteristic red of the reaction became brown; also, when the permanganate solution was added to positive specimens alone, a canary yellow

* Read before the Philadelphia Pathological Society, May 28, 1914.

1. Weiss, M.: Aid in Prognosis in Pulmonary Tuberculosis, Wien. klin. Wchnschr., 1913, xxvi, No. 42; abstr., THE JOURNAL A. M. A., Nov. 22, 1913, p. 1943.
2. Heflebower: Am. Jour. Med. Sc., 1912, p. 221.

was produced. In addition, the last reaction occurred in specimens which had become negative to the diazo but never appeared in normal urine. He identified the yellow body as urochrome and felt that he had oxidized its antecedent or chromogen, so he called this urochromogen and concluded that it was the principal substance causing the diazo reaction and that its precursor was the body which did not react to it. Thus, the urochromogen test should be positive when the diazo is positive, and by being positive when the diazo is negative, should show the presence of the antecedent of the substance on which both tests depend. Weiss attributes the presence of urochromogen to disintegration of tissue with excretion of incompletely oxidized material in toxic patients of low vitality.

In January, 1914, I began to use the diazo and urochromogen tests at Pennsylvania State Tuberculosis Dispensary No. 21. The results are shown in the accompanying table. It occurred to me that the low percentage of positive reactions was due to the fact that all of the subjects were ambulant cases. In February, through the courtesy of Dr. Rosenberger, I was enabled to extend my observations to the laboratory of the Philadelphia General Hospital. Here I had the opportunity of studying specimens from a large number of advanced cases. The positive reactions are seen to be much more numerous. The significant features are the difference in mortality percentage between the positive and negative cases and particularly the high death-rate among those with a negative diazo and positive urochromogen.

COMPARISON OF DIAZO AND UROCHROMOGEN TESTS

	No.	Dead	Per Cent.
STATE DISPENSARY CASES			
Positive to both tests	15	1	..
Negative to both tests	75	1	..
PHILADELPHIA HOSPITAL CASES			
Tuberculosis:			
Positive to both tests	38	16	42
Negative to both tests	137	21	15
Positive U. but neg. D.	13	7	58
Positive D. but neg. U.	2	1	..
Pneumonia:			
Positive to both tests	2	1	..
Negative to both tests	14	4	..
Positive U. but neg. D.	1	..	..
Erysipelas:			
Positive to both tests	8	1	..
Negative to both tests	38	1	..
Positive U. but neg. D.	2	..	..
Pertussis:			
Positive to both tests	2	..	..
Negative to both tests	14	..	..
Measles:			
Positive to both tests	2	..	..
Negative to both tests	11	..	..

An interesting incident occurred in the removal of a patient from the dispensary list to the hospital because of progressive illness. While coming to the dispensary his urine was positive to both tests, which was also the case on admission to the infirmary; a few days later, however, it became negative to the diazo but remained positive to the urochromogen test; death occurred two weeks later.

The technic of Weiss requires a small amount of fresh, limpid urine diluted with water to three times its volume, divided into two test-tubes, to one of which 3 drops of a 1:1,000 solution of potassium permanganate is added, the other tube being used as a control. Many of my specimens were turbid and of different shades of amber or red, but the turbidity and original color appeared to have little effect on the reaction. I recognized as a positive reaction only a distinct canary yellow which remained fairly permanent, although there were frequent slightly yellow reactions which soon disappeared.

In addition to specimens from the tuberculous, I tested urine from patients with some of the other diseases in which the diazo has been found, as well as a large number of normal specimens. The results in the former were insufficient, and in the latter always negative.

Although these figures are meager and not conclusive, I hope that they may be sufficiently suggestive to arouse interest. The tests were performed in most cases only on admission, and all the deaths recorded have occurred within four months. The majority of the cases giving a positive reaction were afebrile. A later report will deal more particularly with the length of time between the first appearance of positive reactions and death and will note the incidence of fever.

The object of this preliminary report is to induce others to adopt this simple test as part of routine laboratory procedure for at least sufficient time to demonstrate its worth.

4719 Baltimore Avenue.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

MENINGOCOCCUS VACCINE.—(See N. N. R., 1914, p. 252).

E. R. Squibb and Sons, New York.

Meningococcus Vaccine, Immunizing.—Marketed in boxes of 3 syringes containing 100, 500 and 1,000 million killed meningococci.

Meningococcus Vaccine, Curative.—Marketed in boxes of 4 syringes containing 100, 200, 400 and 500 million killed meningococci. Also in boxes of 2 syringes containing 100 and 500 million killed meningococci; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed meningococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed meningococci, with a syringe.

PNEUMOCOCCUS VACCINE.—(See N. N. R., 1914, p. 253).

E. R. Squibb and Sons, New York.

Pneumococcus Vaccine.—Marketed in boxes of 4 syringes containing respectively 100, 200, 400 and 500 million killed pneumococci; boxes of 2 syringes containing respectively 100 and 500 million killed pneumococci; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed pneumococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed pneumococci, with a syringe.

STAPHYLOCOCCUS VACCINES.—(See N. N. R., 1914, p. 254).

E. R. Squibb and Sons, New York.

Staphylo-Acne Vaccine.—Marketed in boxes of 4 syringes containing 100 million killed staphylococci and 25 million killed acne bacilli, 200 million killed staphylococci and 50 million killed acne bacilli, 400 million killed staphylococci and 100 million killed acne bacilli, and 500 million killed staphylococci and 200 million killed acne bacilli; boxes of 2 syringes containing 100 million killed staphylococci and 50 million killed acne bacilli and 500 million killed staphylococci and 200 million killed acne bacilli; boxes of 2 ampoules containing 100 million killed staphylococci and 50 million killed acne bacilli and 500 million killed staphylococci and 200 million killed acne bacilli, with a syringe.

Staphylococcus Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed staphylococci; also in boxes of 2 syringes containing 100 and 500 million killed staphylococci; boxes

of 6 ampoules containing 100, 250, 500, 500, 1,000 and 2,000 million killed staphylococci, with a syringe, and boxes of 2 ampoules containing 100 and 500 million killed staphylococci with a syringe.

STREPTOCOCCUS VACCINE.—(See N. N. R., 1914, p. 257).
E. R. Squibb and Sons, New York.

Streptococcus Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed streptococci; also in boxes of 2 syringes containing 100 and 500 million killed streptococci; boxes of 2 ampoules containing 100 and 500 million killed streptococci, with a syringe.

TYPHOID VACCINE.—(See N. N. R., 1914, p. 259).
E. R. Squibb and Sons, New York.

Typhoid Vaccine, Curative.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also in boxes of 2 syringes containing 100 and 500 million killed bacilli; boxes of 6 ampoules containing 100, 100, 500, 500, 1,000 and 1,000 million killed bacilli, with a syringe and boxes of 2 ampoules containing 100 and 500 million killed bacilli, with a syringe.

Typhoid Vaccine, Immunizing.—Marketed in boxes of 3 syringes containing 500, 1,000 and 1,000 million killed bacilli.

VACCINE VIRUS.—(See N. N. R., 1914, p. 245).
E. R. Squibb and Sons, New York.

Small-pox (Variola) Vaccine (Glycerinated).—Each dose in separate aseptic sealed glass tube, with bulb and needles. Boxes of 5 and boxes of 10 tubes.

SERUM ANTIDIPHTHERICUM AND ANTIDIPHTHERIC GLOBULINS.—(See N. N. R., 1914, p. 236).
E. R. Squibb and Sons, New York.

Diphtheria Antitoxin.—Curative doses, marketed in syringes containing 2,000, 3,000, 4,000, 5,000, 7,500 and 10,000 units.

ANTIDYSENTERIC SERUM.—(See N. N. R., 1914, p. 238).
H. K. Mulford Co., Philadelphia.

Antidysenteric Serum.—Marketed in vials containing 50 Cc.

ANTIPNEUMOCOCCUS SERUM.—(See N. N. R., 1914, p. 239).
H. K. Mulford Co., Philadelphia.

Antipneumococcic Serum, Polyvalent.—Marketed in syringes containing 20 Cc. Also marketed in vials containing 50 Cc.

ANTISTREPTOCOCCUS SERUM.—(See N. N. R., 1914, p. 240).
H. K. Mulford Co., Philadelphia.

Antistreptococcic Serum, Polyvalent.—Marketed in vials containing 50 Cc.

Antistreptococcic Serum, Scarlatinal, Polyvalent.—Marketed in vials containing 50 Cc.

SEROBACTERINS.—(See Supplement to N. N. R., 1914, p. 12). The Council has at present no means of determining the identity and purity of serobacterins; they must be used on the guarantee of the manufacturer alone.

Typho-Serobacterin Mulford, Immunizing.—Each package contains 3 syringes of Typho-Serobacterin graduated as follows: First dose, 1,000 million killed sensitized typhoid bacilli; Second dose, 2,000 million killed sensitized typhoid bacilli; Third dose, 2,000 million killed sensitized typhoid bacilli.

Habit as a Physiologic Factor.—Cells, organs and tissues all collaborate together to maintain the specific structural and other activities of the individual organism. The fact that an organism (or other organic part) tends to resist distortion, and to persevere in a definite line of activities, has been ascribed to a *vis medicatrix Naturae;* this is, however, merely a name given to a special aspect of the organism's behavior, and is not to be looked on as a "force" *per se.* The simple fact is that each organism tends to maintain such and such specific activities, and in ascribing the original causation of these, or their persistence, to any material "force," we introduce an unnecessary complication into the nomenclature.—Arthur J. Brock, *Edinburgh Med. Jour.*

Therapeutics

PREVENTION IS GREATER THAN CURE

(Continued from page 1205)

III

ACUTE ACIDOSIS; AUTOINTOXICATION

Whether a lessened alkalinity of the blood and tissues, or whether an absorption of maldigestive or germ toxins is the first factor in this condition, it seems to be a fact that the subsequent symptoms are largely those of acid intoxication. Any chronic disturbance may promote acute attacks of this condition, such as that due to adenoids; to chronically inflamed tonsils; to chronic appendicitis; to maldigestion of fat; to long privation from carbohydrates or to an insufficient amount of carbohydrate food; to profuse continuous vomiting (starvation acidosis); to imperfect liver function; to chronic pain as a preventive of proper digestion as occurs in ovarian and uterine pain; to severe headache (eye-strain, very frequently), besides the acidosis recognized to occur in kidney disturbances and in diabetes.

All persons are liable to this acid intoxication, as even so-called bilious attacks, sick headaches and acute indigestions cause this condition. Children frequently suffer from such disturbances.

The primary symptoms are often quite similar to those in the beginning of an acute infection, such as diphtheria, tonsillitis, scarlet fever, or even pneumonia; hence, the immediate diagnosis must be guarded. A history of repeated attacks will aid in the diagnosis. Of all causes, not only in adults, but also in children, among the most frequent is eye-strain, not recognized for a long time as a cause. The most frequently assigned cause is indiscretions in the diet; but though such are often causes, especially in young children, various articles of food are quite frequently unjustly accused. It will often be found that an eye pain or a headache preceded the other symptoms, and that these attacks may follow definite overuse of the eyes, such as looking at moving pictures, seashore or mountain height eye-strain (that is, long distance vision), or close observation of moving objects, or the addition of long columns of figures, or too much kindergarten work, etc.

The "morning after" nausea and vomiting from overindulgence in alcohol is probably largely an acid intoxication, although small doses of alcohol in the acidosis of diabetes are beneficial when a sufficient amount of starch has not been ingested.

The symptoms of acid poisoning are loss of appetite; coated tongue, or perhaps the tongue may be abnormally red; often nausea and vomiting; constipation; the face is pale, or perhaps flushed; there is headache; generally some fever (not often above 101 F.) in children; the surface of the body is often cold in adults; there may be dizziness in adults and excessive nervous irritability and excitement in children. The skin may show urticaria, erythema, or a punctate rash, or a dark mottling. Some attacks of the above character are really anaphylactic attacks, and may occur repeatedly after certain foods, but others are due to hyperacidity, as evidenced by the sweet breath and the urinary findings of acetone, diacetic and oxybutyric acids. The excretion of urine

is almost invariably diminished, except perhaps in a real migraine attack, and it may show albumin and even casts. The duration of these attacks varies from a day to a week, depending on the character of the exciting cause.

The immediate treatment is the administration of cathartics, alkalies and large amounts of water; high enemas, at first for colon washing and later to introduce physiologic saline and alkalies (such as sodium bicarbonate, sodium citrate and potassium citrate) for absorption into the blood. Stomach washing is often of benefit.

As soon as vomiting ceases, oatmeal gruel or other thin cereal and milk-sugar or glucose should be given. The fruit juices, such as orange and lemon, are of value. Rest, a bland diet, and daily free movements of the bowels and plenty of water taken soon cause a complete return to health.

The preventive treatment is to seek the etiologic factor and eradicate it if possible; if not possible, then to prevent the subjective exciting cause, such as a misuse of the eyes, ill-advised food, too much fat in the food, alcohol, coffee, tea, tobacco, etc. Bad teeth and bad throats must be treated.

BATHING

As a hygienic measure, bathing goes back to most ancient times. Warm and cold water baths, and even medicated baths are mentioned in early Grecian periods. In the middle dark ages, after the Roman period, bathing as a hygienic and therapeutic necessity seems to have been forgotten. Interest in public baths and medicinal bathing and the hygienic popularity of frequent bathing has only within the last thirty or forty years been slowly reviving.

Frequent bathing is essential to remove dirt, sweat and skin excretions. Irritating decomposition and offensive odors are caused by the neglect of bathing, to say nothing of such neglect causing many skin diseases. Proper bathing increases normal excretions from the skin and promotes the health of the skin. Hot water bathing relieves the congestion of internal organs, improves the general circulation, and cold water bathing tones up the vasomotor system. A normally bathed skin is a better regulator of the internal temperature, a better excretor, and has more normal sensations (heat, cold, esthesia). Soap, hot water and friction are essential to remove dirt and sweat. A simple plunge or shower bath, if taken daily, and followed by rough-towel friction, may keep the skin clean and healthful, but even then a hot soap bath is more or less frequently essential.

The daily cold plunge does not necessarily place a man "next to the Gods," as he so frequently thinks it does. Such cold plungers are often very proud of their accomplishment and sneer at those who do not take this daily treatment, and the plunger is likely to "thank God that he is not like other men." Very many times daily cold plunges or cold showers are harmful, especially to those who are underweight or are losing too much weight. A daily or nearly daily bath of some kind, however, is essential for almost every one in order to promote the best of health and to prevent some diseases.

It is not our purpose to describe, or even to discuss the various kinds of baths, or hydrotherapy. Medicated baths, various sweating baths or so-called baths (electric light or body baking), mud baths, etc., have all their valuable uses, but are not necessary for the promotion of health in the well, that is, are not hygienic measures. The cold bath may be from 80 to 70 F. or below. The tepid bath may be considered anything from 80 to 100 F.; anything much over 100 F. is a hot bath.

Whenever possible, every family should have a set bath tub. Every city should have public as well as private bath houses and swimming pools, except where the climate is warm the year around and good water for bathing (fresh or salt) is near at hand. Every child should be taught to swim.

The family physician should be consulted as to the kind of bathing each individual should take, and many serious errors would not occur. It is not advisable to bathe directly after a meal. Good fresh air is as essential for bathrooms as for any other part of the house. One respires more while bathing (hot or cold), and hence the air should be pure. Friction is a valuable adjunct to bathing.

The medical value of salt water bathing has been overestimated; it is a pleasure, and it is more exercise, especially in surf bathing and swimming, and thus it is valuable for the well and strong. The cold air at the seashore after the person leaves the water is tonic, but may cause chilling in the weak.

MEAT INSPECTION

This is to urge the necessity for the state employment of skilled meat inspectors for animal food slaughtered for local use. The government inspects only for interstate and export commerce. Besides tuberculous beef, the danger of the human being acquiring tapeworms from cysticercus-infected beef and pork, and the danger from trichinae should be emphasized. It should be known that sheep may also be infected by the cysticercus (from dog infection) though this is not transmitted to man. Swine, at least, are often infected with lung fluke disease. Esthetically, however, it is not pleasant. The danger lurking in ancient cold-storage fowls and turkeys and stale shellfish, and shellfish gathered or fattened in sewerage-polluted water, only emphasizes the need of local food inspectors, backed by bacteriologists employed by local boards of health.

IMMUNITY TO DISEASE CAUSED BY PROPER FOOD

Too much fat in food causes the formation of too many soaps and a loss of calcium from the body through the stools. This leads to acid intoxication, and frequently occurs in infants. While carbohydrates tend to prevent acidosis, too much carbohydrate in children is said to cause a surplus of water in the tissues, and this creates a tendency to acquire disease. Whether or not this suggestion is true, certain it is that a properly mixed diet gives children and adults much better power, apparently, to ward off and fight disease. A milk diet, for instance, too long continued is bad for both child and adult. Young children should receive milk, starch and maltose or lactose, and later more protein, and they are less likely to acquire infection. It is quite probable that the building up of more antibodies by richer protein food may be the reason that in adults the infection of tuberculosis is generally at first local, while in young children the infection is likely to be immediately general.

A well, healthy infant rarely has thrush, while by the sickly infant it is readily acquired.

(To be continued)

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SATURDAY, OCTOBER 10, 1914

THE WRAPPING OF BAKER'S BREAD

It has been said that the making of a perfect loaf of bread is the goal of all those who aspire to excel in cookery. Certainly bread, which forms a part of every well planned meal, is a food of which the palate never tires. Let the loaf be ever so satisfactory, however, with respect to size and symmetry, crust and crumb, when it leaves the baker's oven, it may nevertheless experience subsequent changes which sooner or later render it less attractive, palatable, or wholesome. Stale bread does not appeal to the taste in the same way that fresh specimens of the "staff of life" do; but in addition to the development of staleness bread may also develop so-called bread diseases caused by micro-organisms, rendering the product unfit for human consumption. Furthermore, like many other unprotected and carelessly handled articles of food, exposed bread may become a purely mechanical carrier of objectionable organisms.

The recent agitation in behalf of improved conditions in the food industries has involved not only the adulteration of the products entering into the ration of man and the domestic animals, but likewise the cleanliness of the articles of diet intended for human consumption. The plea for clean milk is becoming more prominent than the propaganda for pure milk. Sanitary food legislation is beginning to aim at food that is clean from the point of view of the hygienist.

The demand for clean bread has promptly followed the cry for clean milk and unpolluted water. Already in many communities regulations are in force which compel the protection of bread and bakery products between the oven and the home. Bread wrapped with either porous or paraffined paper is now a common sight even in small villages of the United States. From the sanitary point of view it is of no small value that an article of diet so extensively employed as bread is, should be practically sterile both in the interior and on the surface of the loaf as it leaves the oven. Bacteriologic studies reported at various times leave no doubt that unprotected bread subsequently acquires a microbial flora frequently extensive in variety and number. It has been stated, for example, that the colon bacillus was present on the surface of 17 per cent. of unwrapped samples examined in one investigation and that in addition to this number 12.5 per cent. showed the presence of such large numbers of bacteria as to be classed as of doubtful quality.[1] On the other hand, samples of wrapped bread showed relatively low bacterial counts and the absence of pathogenic organisms.

The wrapping of bread involves something more than the mere exclusion of living organisms and inert dirt. It necessarily interferes with the passage of moisture from the loaf. The change in the distribution of moisture in a loaf of bread is attended by the development of a different odor and flavor which is familiar under the name of staleness. Few persons are as readily satisfied with stale bread as with that which possesses the qualities referred to by the designation of fresh. Some bakers have expressed themselves as opposed to the wrapping of bread, in the firm belief that when it is kept in a close, warm, moist atmosphere from the time of baking it is far more likely to develop sourness and mold than if stored where it may cool rapidly and lose any excess of moisture.

It is not easy at present to describe the change which results in staleness. The suggestion has been offered that the starch particles composing the crumb are colloids which hold considerable quantities of water in combination. Fresh baked bread contains much more water in the interior than in the crust of the loaf. The interior crumb is in a colloidal condition with a rather high moisture content; but, as the bread grows old, the ratio of the water content between crust and crumb is changed, the water of the latter leaving it to be absorbed by the relatively drier crust. The arresting of the passage of moisture through the crumb and the concentration thereof in the crust is injurious to the latter, and may likewise detrimentally affect the interior of the loaf. Other factors such as a development of increasing acidity with age may unquestionably enter into the problem of staleness.

Although the use of the bread wrapper has met with public approval in many quarters, it is evident that the claims of injury to the quality and palatability of the loaf demand consideration along with the possible sanitary advantages. A chemical investigation of the subject has been completed in the department of food and drugs of the Indiana State Board of Health by Barnard and Bishop.[2] The data confirm the observations on the physical appearance of wrapped and unwrapped loaves. The wrapping of the bread, either in semiporous waxed or paraffin paper retards the escape of moisture and tends rather to the preserva-

1. Sadtler: Rep. Sixteenth Convention Nat. Assn. of Master Bakers, 1913.

2. Barnard, H. E., and Bishop, H. E.: The Effect of Bread Wrapping on the Chemical Composition of the Loaf, Jour. Industrial and Engineering Chem., 1914, vi, 736.

tion of that "colloidal condition and physicochemical equilibrium," the destruction of which results in staleness. The belief that the moisture of the crumb is imparted to the crust, which thereby loses its crispness and becomes soft, is not borne out by the work of the Indiana chemists. Whereas unwrapped bread loses its freshness after the first day, the early keeping quality both as to condition of crumb, flavor and odor is enhanced by the use of wrappers. There is, accordingly, no occasion at present for discarding what has seemed to many to be a wholesome innovation in the distribution of bakery products.

THE INCREASED FAT-LIPOID CONTENT OF THE BLOOD IN PREGNANCY

By means of the precipitin test it is now a comparatively easy matter to determine the species from which a sample of blood is derived. Spots and stains of human blood can be differentiated readily from those made by the blood of all kinds of animals, and it is possible to differentiate the blood of closely related species. As yet it is not possible to identify the individual from examination of his blood, but even that may become feasible, because the more blood is studied by newly devised methods, for example, isoagglutination, tests for digestive ferments and antibodies of diverse action, as well as by established chemical and microscopic methods, the more definite becomes the fact that the blood of each individual is more or less peculiar. We know now that human beings are permanently separable into three or four main groups depending on the agglutination of their red corpuscles by human serum. The blood of pregnant women appears to have in it a digestive ferment directed specifically against the placental tissues (Abderhalden's test), and the blood of a person who recently has had typhoid fever is different from that of a person who has not had typhoid fever and has not been inoculated with typhoid bacilli. Many other examples of like import might be cited, but what has been said is enough to make it clear that in time we may learn to estimate the peculiarities of the blood of an individual so accurately and completely as to determine thereby his identity. In connection with this general question it is interesting to note that recently it has been found that the difference in the fat and lipoid content of the blood of the mother and the new-born child is so great that under certain circumstances it may serve to differentiate the maternal blood from that of the new-born. Hermann and Neumann,[1] to whom we owe this demonstration, found that in normal women the fats and lipoids equal 5.9 gm. in a kilo of blood, in women in the later stages of pregnancy 7.8 gm., and in the new-born 4.365 gm.

In pregnancy the amount begins to increase in the third month, and after birth the normal condition is reached in about the second week in women who nurse, somewhat later in those who do not. As there occurs a distinct lipemia and lipoidemia in old women and after removal of the ovaries, it would appear that the condition is dependent, in some way, on suspension or change of activity of the ovaries, and that in pregnancy there is a suspension or change in the actions of the ovarian apparatus. As the tests necessary to distinguish the blood of the child from that of the mother on the basis of the difference in fat and lipoid content are very simple,[2] it is believed that under favorable circumstances they will prove of practical value when the question arises whether certain blood spots are of maternal or fetal origin (Vollhardt).

The chief interest of the demonstration of the high fat-lipoid content of the blood in pregnancy, lies, however, in the light it throws on the functions of the ovaries. At the same time it forms a new illustration of the changing peculiarities to which the blood is subject.

INTESTINAL OBSTRUCTION

During the past two or three years or longer, the cause of death following intestinal obstruction has been the subject of active investigation in a way that bears witness to the excellent spirit in which medical research is at present being pursued in the United States. The fatal outcome of interference with the normal passage of intestinal contents is usually too rapid to be attributable to starvation. Various theories, proposed to account for the characteristic symptoms, have been championed by different workers with the result that the interchange of criticism and the analysis of the results already achieved have become a stimulus to new experimentation. Thus the work of Draper, Murphy, Hartwell, Whipple and their collaborators — to single out a few names — has already greatly increased our knowledge of the problems of intestinal obstruction and brought them much nearer to solution than they were prior to the activity of these American investigators. In referring more specifically to one of the most recent contributions by Hartwell, Hoguet and Beekman[1] we have no intention of implying that it represents the final word; but it does lend emphasis to certain facts and shift the burden of proof in a new direction.

The theory of a bacterial infection of the organism by the passage outward of bacteria from the intestinal lumen has had much to support it. The newer experi-

1. Hermann and Neumann: Ueber Lipoidgehalt des Blutes normaler und schwangerer Frauen sowie neugeborener Kinder, Biochem. Ztschr., 1911, xliii, 47.

2. Compare Hermann and Neumann, Reference 1. Vollhardt: Die Bedeutung neuerer Methoden zur Unterscheidung mütterlichen und fötalen Blutes für die gerichtliche Medizin, Vrtljschr. f. gerichtl. Med., 1914, xlviii, 1.

1. Hartwell, J. A., Hoguet, J. P., and Beekman, F.: An Experimental Study of Intestinal Obstruction, Arch. Int. Med., 1914, xiii, 701. In this paper the literature of the subject will be found referred to in considerable detail. The Consequences of Intestinal Obstruction, editorial, THE JOURNAL A. M. A., Nov. 29, 1913. p. 1988.

mental evidence clearly shows, however, that despite the activity of micro-organisms within the bowel, they are not a necessary factor in determining either the symptoms or the fatal outcome of intestinal obstruction. The assignment of the responsible rôle to bacteriemia is no longer tenable, and this feature is excluded as the essential cause of death. Likewise the view that a disorder of the nervous system controlling the cardiac and vasomotor systems is the primary fault has nothing more than indefinite analogies to support it.

The point most vigorously debated concerns the possibility of an intoxication from poisonous substances engendered and imprisoned in the obstructed portions of the intestine. Certain it is that the intestinal contents may exhibit an intense toxicity. Whether this remains unchanged when the material has been rendered sterile is perhaps not equally positive. Living bacteria may, of course, kill if they gain entrance into the peritoneal cavity. On the other hand, we are reminded that the mere presence in an obstructed intestinal tract of substances which act as poisons when introduced directly into the circulation is no indication that these substances cause the death resulting from an obstruction, since such substances may be found in the intestine in conditions of continued health. Hartwell, Hoguet and Beekman insist that to accept the view that death results from toxemia it must be conceived either that new poisons are elaborated and absorbed or that an abnormal absorption of normally present products takes place. Whipple, Stone and Bernheim,[2] though unable to isolate any poisonous material from the normal intestine, have obtained toxic products from closed or obstructed loops of bowel. They believe that the harmful substance with which they were dealing is elaborated in the mucosa and that some as yet unknown agency is at work which profoundly alters the intestinal epithelium under conditions of obstruction. Hartwell and his colleagues, on the other hand, cannot justify these claims. They believe that the alleged toxic substances are derived from damage to the intestinal wall. Quoting them, the essential factor in causing the symptoms and death in intestinal obstruction does not lie in the poisons *per se*, but in the production of lesions which favor their abnormal absorption. Lacking these lesions individuals die only from lack of water or from starvation, if dehydration is prevented.

The damage localized in the bowel is believed to result largely from the trauma inflicted by the overdistention with contents acting to impede the circulation. The chemical action of digestive enzymes stagnating above the obstruction may also be of moment. Such a damage having resulted, Hartwell and his colleagues picture a bacterial invasion into the bowel wall with a death of tissue cells which is invariably demonstrable by histologic examination. In this localized deterioration the poisonous substances appear to be elaborated. The loss of water characteristic of intestinal obstruction is caused by the excessive drainage into the intestinal lumen followed by vomiting. It is the merit of Hartwell and Hoguet[3] to have clearly shown that this unexpectedly significant factor is entirely under therapeutic control and can be rendered harmless by subcutaneous administration of physiologic saline solution, for example, by continuous hypodermoclysis.

The evidence with reference to the poison or poisons involved in the fatal conditions is still indirect and inferential. The salutary effect of the replacement of lost water is manifested only so long as the intestinal mucosa remains intact. Obstruction of the lower bowel is less productive of dehydration because there is a long intact intestinal surface through which reabsorption can take place, the vomitus being thereby reduced in amount. This may explain why high intestinal obstruction in man is so much more acute than low obstruction. In the latter, mechanical conditions render the damage factors prominent. The clinical applications of the newer experimental studies need to be worked out in their details, but there can be no doubt that they will furnish a valuable contribution to practical medicine.

2. Whipple, Stone and Bernheim: Jour. Exper. Med., 1913, xvii, 286.

3. Hartwell, J. A., and Hoguet, J. P.: Experimental Intestinal Obstruction in Dogs, with Especial Reference to the Cause of Death and the Treatment by Large Amounts of Normal Saline, The Journal A. M. A., 1912, lix, 82.

THE HISTORICAL PERSPECTIVE IN MEDICINE

We seldom realize the importance of a historical perspective in medicine and surgery. Many a discovery proclaimed as "new" proves, in the light of historical knowledge, to be nothing more than a statement of some previously announced discovery subsequently demonstrated to be of little or no service. Last year Karl Sudhoff[1] of Leipsic, in his paper "On the Origin of Syphilis," besides relegating again into the background the recently revived idea of the American origin of syphilis, called particular attention to the treatment of syphilis by mercury which had developed before the discovery of America. He reminds us that several times in medical history arsenic has been recommended as a triumphant substitute for mercury. It has always, however, failed to justify the claims of its adherents; and experience with salvarsan has seemed to emphasize this tradition.

Sudhoff confesses that he cannot settle the question of the absolute origin of syphilis, though he thinks that he has been able to show the scientific recognition of syphilis and its therapeutics. Syphilis differs in this from all the other "new" diseases that have been reported. We find in the history of European medi-

1. Sudhoff, Karl: Der Ursprung der Syphilis, Seventeenth Internat. Cong. of Med., Section, History of Medicine, London.

cine at the same period, both the recognition of the disease and the development of a genuine therapy for it. As Professor Sudhoff says, the discovery and detailed study of this method of treatment is a most interesting chapter of medical history. He remarks that it is "the method of treatment which even to-day —in spite of the often tried and ever successively abandoned method of treatment by means of arsenic— remains the surest, and, with slight modifications, still in our time after 400 years of experience, maintains its vogue." He calls this discovery of the use of mercury one of the greatest ever made in therapeutics. He proclaims the French physicians and surgeons of the fourteenth century who pointed out its exact indications, as among the greatest of therapeutists. Perhaps, he adds, they owed some of their knowledge to the Italians of the end of the thirteenth century, but in any case it is to the careful French observers that medicine owes probably this greatest of its triumphs in healing.

Arsenic has indeed a most interesting therapeutic history and at various times has been in vogue for different diseases. Again and again it has been advanced as a rival to mercury in syphilis. It is almost the only drug that has ever been seriously advocated as a competitor of quinin in the treatment of malaria. It has been particularly recommended in chronic malaria, though occasionally, even in acute stages, some special form of arsenic has been recommended. Now that we know that syphilis is due to a parasite biologically resembling the *Plasmodium malariae*, that is, an animal rather than a plant parasite, this effect of arsenic is not surprising. It has, however, in malaria, never achieved the success of quinin.

The knowledge of the many previous experiences with arsenic should prevent enthusiastic acceptance of any new form of arsenic therapy until it has been thoroughly tried. Though known and feared as a deadly poison, it has been recommended many times for many different diseases, usually with a great blare of trumpets. At best, even with our present knowledge, it can be classed only as one of the alterative drugs whose effect is so subtle that it can only be characterized as an "alteration in metabolism." There could scarcely be a more generic classification of a drug. It seems probable, however, that the mystery of the apparent manifold usefulness of arsenic is due to its toxic effect on animal parasites. Unfortunately for the enduring success of the arsenical remedies, most of these animal parasites seem, like the human being himself, to acquire a tolerance for it after a time. At least, some sort of an immunity against its effects seems to develop that sadly hampers its subsequent therapeutic usefulness. The chapter of previous experiences with remedies is one of the most interesting and valuable in the history of medicine.

WINTER SPORTS AND HEALTH

In several respects mountain-climbing is a peculiarly wholesome form of athletic sport for the large number of persons whose vocations are sedentary. The indoor life which these persons commonly lead and the protection from even the slightest rigors of climate which their mode of housing and places of work afford them are more than likely to render them oversensitive to the extremes of weather. It is for precisely such unexposed persons that an occasional trip to the highlands and an alpine excursion has most refreshing recuperation and stimulus in store. The heart is called on to exert itself to a degree which, in an otherwise healthy subject, will be followed only by the invigoration characteristic of most exercise. The advantage is not confined to a single organ; for the respiratory mechanism, the entire musculature of the body as well as the cardiac and circulatory apparatus, and the general metabolic processes apparently benefit in ways not readily definable in accurate scientific terms. In addition to an indefinable feeling of well-being, considerable skill is acquired in certain of the performances of mountain-climbing or other feats of alpine sport. The combination has shown its wholesome and invigorating influence on many an individual suffering from the "fag" of a life of physical inactivity.

There was a time when the patronage of the mountain resorts was confined to the summer months. To-day winter sports attract visitors to the same surroundings. It is not, as a rule, the invalids who sit on porches or the lethargic aged who are found visiting the highland regions in winter, but rather those who are ready to participate vigorously in the pastimes that call for muscular exertion and endurance. Zuntz of Berlin, to whom we owe much of our scientific information with regard to alpine physiology, has recently investigated in a somewhat cursory way the effect of a rather severe outing and mountain climb in the depths of winter, on a large group of physicians ranging in age from 30 to 60.[1] Their testimony may be assumed to be based on intelligent, trained observation. The evidence indicated that even very unusual degrees of muscular activity under environmental conditions making extreme demands on the heat-regulating apparatus of the body — as happens during mountaineering in a snow-storm — are as a rule without detriment to the participants. On the contrary, even a sedentary person unaccustomed to either the exercise or the rigor of the climate may actually exhibit benefits. Those who are free from addiction to alcoholic beverages and are somewhat used to moderate daily exercise seem to enjoy the exhilaration most keenly. Even the untrained, however, who have found the unusual demands on their muscular and cir-

1. Zuntz, N.: Zur Kenntnis der Einwirkung des winterlichen Höhenklimas auf den Menschen, Ztschr. f. Balneol., Klimatologie u. Kurort-Hyg., 1914, vi, No. 18.

culatory apparatus rather strenuous and sometimes unpleasant, may feel the beneficial after-effects, expressed in improved cardiac and vasomotor functions.

It is not intended here to maintain that the "snow sports" are ideal for all. Common sense would forbid such a sweeping dictum; but precisely as the night air, and sleeping in the open all year around have been shown by modern practices to be without danger, so winter sports even in a severely cold climate may be utilized in outdoor life, even without preparatory training for a supposedly dangerous hygienic undertaking.

THE NEW PUBLIC HEALTH IN NEW YORK

Numerous attempts have been made to crystallize in legislative form the conclusions drawn from recent advances in preventive medicine. Sometimes these attempts have taken detailed form, as in the legislation against the common drinking-cup and roller towel, but there is evidence that it is now passing into the broader phase of general public health organization. The development of this movement is of the greatest importance to the medical profession. If it tends to reduce illness and disease of certain kinds and so in a sense curtails the opportunities of the medical practitioner, it also opens up the possibility of a new career in which service to the individual will be replaced by service to the state. The recent reorganization of public health administration in the state of New York is in many ways a significant step.

The working of that part of the new public health law of New York State which delegates to a public health council of seven members the power to establish a sanitary code for the state (outside of New York City) will be watched with particular interest. The conferring of such powers on the boards of health of cities is a common phenomenon, and in state legislation the same principle has been applied to industrial problems. It is as yet, however, novel in the field of state hygiene. The responsibility conferred on a small body by such a plan is a serious one, but the personnel of the New York Public Health Council is such as to inspire confidence in its discretion. Physicians will recognize Commissioner Biggs, Dr. Simon Flexner and Dr. T. M. Prudden as eminently qualified to represent the medical profession of the state; and of the three lay members, Mr. Homer Folks is well known for his many services to the cause of social reform, particularly in connection with the campaign against tuberculosis; H. N. Ogden is professor of sanitary engineering at Cornell University, and Mrs. Elmer Blair is the chairman of the health committee of the National Federation of Women's Clubs.

The first sections of the sanitary code, dealing with communicable diseases, which went into operation May 1, declare twenty-four diseases to be "communicable" and therefore notifiable, including some diseases like dysentery and streptococcus sore throat, about which it is highly desirable that we should acquire more precise information, and omitting cancer and pneumonia, which have been made notifiable in some communities without sound reasons. The physician is required to report these diseases to the local health officer within twenty-four hours, as is the "superintendent or person in charge of every hospital, other institution or dispensary." Special duties as to reporting are laid on teachers and school principals, proprietors or keepers of hotels, boarding houses and lodging houses, visiting nurses and public health nurses, and persons in charge of labor or other camps, and the masters or persons in charge of vessels.

The code is essentially modern in emphasizing isolation rather than quarantine. Households are to be quarantined *en bloc* only as a last resort when neither proper isolation on the premises nor removal to a hospital can be accomplished. Minimum periods of isolation for various diseases are specified for the patient himself, and maximum periods of incubation for those exposed; but the prolongation of the former and the shortening of the latter are left to the discretion of the local health officer. Exposure of children or minors to persons affected with measles or whooping-cough, as well as diphtheria, scarlet fever and small-pox, are specifically prohibited, and stringent regulations forbid the handling of milk or other foods by persons suffering from communicable disease.

The attitude of the Public Health Council toward disinfection is another notable indication of present-day tendencies in sanitation. Particular weight is laid on the prompt disinfection of excreta in the intestinal diseases and of discharges from the nose, mouth and ears in the others, and the physician is required to give detailed instructions on this subject on his first visit. The health officer must furnish special circulars of instruction to the family. On the other hand, at the termination of the disease, rooms, furniture and belongings are required to be cleansed, renovated and disinfected only "when deemed necessary by the local health officer, or required by this code, or otherwise by law," the last two clauses pointing to hypothetic future requirements and not to any now in existence.

These sections of the code are published as Special Bulletin No. 2 of the New York State Department of Health in conjunction with a series of regulations for cleansing and disinfection which state in detail the procedures which the department considers necessary under various circumstances. Together they form a sane and well-balanced digest of the best practice in modern preventive medicine. The first instalment of the work of the Public Health Council goes far to

justify the high hopes which have been entertained of the work of that body, and its enforcement should make possible a control of communicable disease such as has never yet been attained in the United States, outside of a half dozen of the larger cities.

Current Comment

DEPARTMENT OF HEALTH BILL ABANDONED

According to Washington correspondents, President Wilson has announced a legislative program for the remainder of his administration. Greatly to the regret of his many supporters and admirers in the medical profession, he has not considered it advisable to include in his program a bill for the creation of a national Department of Health. This measure, endorsed by the Democratic party at Baltimore, is one of fourteen propositions thrown overboard. If reports are correct, the President for the remainder of his term will urge the passage of only four measures: a bill regulating the development of water power in navigable streams; a bill providing for the leasing of mines and other resources on the public domain; a bill providing for eventual independence of the Philippines, and a bill providing for the purchase of merchant vessels. The proposition for the creation of a national Department of Health is the last subject but one on the list of fourteen discarded measures. Mr. Wilson, during his term of office, has secured much important legislation. He has also guided the nation through the intricacies of the Mexican and Japanese situations and the present European war muddle. These might well be regarded as sufficient accomplishment for two years. In seeking to limit his activities during the rest of his term to a few measures which can be passed, rather than to a large number of doubtful propositions, Mr. Wilson is acting wisely. The only difference of opinion which can arise is the relative importance of the four subjects selected as compared with those rejected. The development of water power and the control of natural resources are in line with the conservation campaign which has received support throughout the country. The purchase of merchant vessels is an emergency measure brought about by the present European war. The independence of the Philippines is a moral rather than a political question. The selection of these four subjects does not necessarily indicate that they are, in the minds of the administration, of paramount importance, but rather that, in proportion to their importance, they are, perhaps, more fully supported by public opinion. Yet it is a strange paradox that the conservation of water power and mineral wealth should be placed before the conservation of human life. Perhaps if we had no federal health machinery of any sort, the situation might be regarded as more urgent. As a matter of fact, our Public Health Service has developed into a most efficient bureau, and is doing excellent work. It is not a question, however, of the value of the present organization, but whether a better one might not be obtained. Yet the very efficiency of the Public Health Service may have been one of the factors which led Mr. Wilson to abandon, for the present, efforts for a national Department of Health. Whatever may have been the reasons, it is to be regretted that this measure has been temporarily given up by the administration. Its endorsement by the Democratic party and its support by Mr. Wilson aroused strong hopes that it would be taken up as an administration measure and pushed to practical consummation. Apparently, such expectations must be temporarily abandoned. It is to be hoped that before the next presidential campaign the popular demand for advanced public health legislation will be so strong as to lead all of the national parties to include an endorsement of this measure in their platforms. In the meantime public education must continue, with a view to ultimate rather than immediate results.

THE VASOMOTOR APPARATUS IN PNEUMONIA

There is a wide-spread belief that the vasomotor cells of the nervous system are peculiarly susceptible to the harmful effects of a variety of toxic agencies. Apparent failures of the circulatory apparatus to respond in a normal way to the demands made on it in certain abnormal conditions are very commonly charged to inefficiency or fatigue of the vasomotor center, which has accordingly been made responsible, in the lack of more tenable explanations, for pathologic manifestations of varied sorts and diverse origin. In pneumonia, cardiac failure is generally ascribed to the effect of the toxins on the heart, although less commonly complicating conditions such as pericarditis and collateral edema or previous organic disease of the heart are called to account for the symptoms. Vasomotor paresis affecting the splanchnic area is further charged with being a factor in the heart exhaustion. One of the foremost American investigators of the physiology of the circulation, Prof. W. T. Porter of the laboratory of comparative physiology in the Harvard Medical School, now denies the long-maintained proposition that the toxins of pneumonia specifically injure the vasomotor cells of the organism. He and his colleagues[1] have subjected this important question to study in animals in which experimental pneumonia was produced either by injection of cultures of infective organisms down the trachea into a bronchus or by introduction of pneumococci directly into the circulation. The condition of the vasomotor center can be determined by measuring the reflex change in blood-pressure produced by stimulating various afferent nerves. The Boston investigators admit that earlier experimenters, using the methods of their day, have failed to show a normal change of blood-pressure in this way; but with more perfect methods they have now demonstrated a normal vasomotor reflex in indi-

1. Porter, W. T.; Newburgh, L. H., and Newburgh, L.: The State of the Vasomotor Apparatus in Pneumonia, Am. Jour. Physiol., 1914, xxxv, 1.

viduals with almost wholly consolidated lungs and about to die. Thus, even in fatal pneumonia, the experimental evidence proves that the vasomotor center is not impaired. To those who are inclined to place disease symptoms and their etiology in man on a plane by themselves it may be of interest to add that it was possible, in the types of animals studied, to imitate many of the phenomena seen in the human forms of pneumonic invasion. In some there were acute inflammatory processes of the lung-tissue, of the bronchopneumonic type; in others there were the familiar areas of consolidation, easy of clinical recognition. The vasomotor reactions were comparable in all.

THE ASSOCIATION PROTECTS THE PUBLIC

In the Propaganda for Reform department of this issue there is a brief notice of the unsuccessful attempt on the part of Dr. Peter P. Duket to persuade the citizens of Las Vegas, New Mexico, to capitalize his worthless scheme. Fortunately through THE JOURNAL, the medical profession of the town had been made familiar both with Duket's methods and his worthless "cure." As a result, the business men of Las Vegas gave short shrift to the faker. The case is merely one of many in which THE JOURNAL has been the means of protecting both individuals and communities against fraud. The cases are so common that we seldom give much thought to the problem involved, the work of the Association in this direction being taken as a matter of course. It is worth while, occasionally, to call attention to the fact that there is at present no other agency doing this work. It is fair to assume that had THE JOURNAL not investigated and exposed the methods of Duket he would have been successful in persuading the business men of Las Vegas to help finance his scheme. Here then is a scientific organization performing an altruistic and very real service to the public—a service that is not measurable in mere dollars and cents. And for such work as this the beneficiaries of medical frauds vilify the American Medical Association.

THE FATE OF THE YELLOW PLANT PIGMENTS, CAROTIN AND XANTHOPHYLLS, IN THE BODY

Among the pigments which have a wide-spread occurrence in food materials of both animal and vegetable origin are the xanthophylls and carotin, the relation of which to the yellow lipochrome of milk-fat, body-fat, blood-serum and the corpus luteum has already been reviewed in THE JOURNAL.[1] Xanthophylls are quite as widely distributed in green plants as is carotin, yet the latter preponderates in the pigment collections which are found in the animal tissues of such species as the cow that ingest the plant pigments. The reason for this is suggested by the investigations of Palmer and Eckels at the University of Missouri,[2] according to which the appearance in the system of carotin when fed in excess may be explained on the ground of its greater stability toward the digestive processes as shown by the digestion experiments and the abundant appearance of the pigment in the feces. The failure of the xanthophylls to appear to any extent in the system may be due similarly to the fact that they are apparently more easily destroyed during digestion. If fat is present to any extent some of the xanthophylls will undoubtedly be taken up and enter the circulation dissolved in the fat. There is, in fact, evidence to show that what xanthophylls can be found in the blood are present dissolved in fat. In those species in which fat plays a greater part in the food than it does in cattle, xanthophylls are likely to appear to a greater extent in their bodies, since it can be more readily transported therein. This seems to be the case in man; for although the fat of human milk may be tinted by both carotin and xanthophylls, the relative proportion of the latter is usually greater than in the familiar carotin-rich fat of cow's milk.

1. The Natural Yellow Pigments Occurring in the Body, editorial, THE JOURNAL A. M. A., Sept. 12, 1914, p. 948.
The Relation Between the Color of the Body-Fat and the Breed of Cattle, editorial, THE JOURNAL A. M. A., Oct. 3, 1914, p. 1210.

2. Palmer, L. S., and Eckles, C. H.: Carotin—The Principal Natural Yellow Pigment of Milk Fat: Its Relations to Plant Carotin and the Carotin of the Body Fat, Corpus Luteum and Blood Serum. IV. The Fate of Carotin and Xanthophylls during Digestion, Jour. Biol. Chem., 1914, xvii, 237.

WHAT'S IN A NAME?

A large, gray stone building stands in a garden plot, its red tiled roof and striped awnings giving a sense of alertness and vivacity. Under its spreading trees on benches and on the cool green lawn sit groups of aged men and women with here and there a younger one in a rolling chair or reclining seat. The observer passing by stops to smile at the serenity and peace of the scene. And then as he passes the door there blazons up before him in glaring letters the words "Home for Incurables." Mingled with his feeling of pity there comes something of shock. Some institutions—why not all?—are called by non-committal and inviting names like "Rest Haven," "Placid Retreat" and "Shadow Lawns." To its inmates and even to visitors the hospital, home or sanatorium will be more pleasant under a more attractive title suggesting rest and quietude.

GLYCO-THYMOLINE—NOT A HARMLESS FRAUD

In the Propaganda Department this week, the Council on Pharmacy and Chemistry publishes a report on Glyco-Thymoline. To many of our readers, doubtless, the thought will come: Why devote space to a product that is comparatively harmless while there are so many really vicious frauds on the market? The answer is that Glyco-Thymoline is not harmless but vicious as at present exploited. The stuff, as every physician knows, is a mild, alkaline antiseptic practically devoid of germicidal power. As such it doubtless has a place as a simple home remedy, to be used as a mouth wash or cleansing agent. Undoubtedly, this is what the stuff is largely bought for, and

if the manufacturers confined their claims for it within these limits there could be no reasonable objections to it. Unfortunately, however, the "patent medicine" business has been steeped in falsehood and fraud for so many years that it is seemingly impossible for those engaged in it to play fair with the public. Glyco-Thymoline is inferentially recommended in such serious conditions as diphtheria, ophthalmia in the new-born, consumption, etc. The danger of such recommendations, even though made indirectly rather than directly, are patent to every thinking physician. Yet, the wide sale of Glyco-Thymoline can be charged wholly to physicians. So far as we know, the manufacturers have never advertised directly to the public. Their periodical advertising has been in medical journals, and the doctors, who have prescribed the stuff—with the name blown in the bottle and the suggestions for medication in the pamphlet around the bottle—have done the rest. Physicians, therefore, must shoulder the responsibility. This is the excuse, if excuse is needed, for the Council taking up for consideration a product, which however harmless in itself, is, through its method of exploitation, a menace to public health.

Medical News

COLORADO

Nomination of Dr. Work for Senate.—Dr. Hubert Work, Pueblo, is a candidate for the United State Senate on the Republican ticket, having been nominated at the direct primary by a large majority over the other candidates.

DISTRICT OF COLUMBIA

No Epidemic of Typhoid.—Dr. William I. Woodward, health officer of the District of Columbia, calls attention to a statement that an epidemic of typhoid was taking place there. He says that on September 30 there were in the District of Columbia ninety-six cases of typhoid fever, a record which is better than for any of the years from 1910 to 1913. The population of the District of Columbia, as determined by a census taken in the spring of 1913, was 353,297. The conditions must, therefore, be considered as quite favorable.

ILLINOIS

Zone of Quiet for Hospitals.—An ordinance was introduced in the city council of Quincy, September 24, providing for a zone of quiet within 200 feet of all hospitals.

Personal.—Dr. Catherine B. Slater, Aurora, has returned from abroad.——Dr. Charles N. Hazelton, Morrison, announces his retirement from active practice.

New Hospital.—Work on the new Lutheran Hospital between Rock Island and Moline will commence in the early spring. More than $40,000 of the $50,000 required has already been raised.

Diphtheria in Barrington and Oak Park.—In Barrington it is reported twelve children are sick with diphtheria. In Oak Park Mr. W. H. Hatch, superintendent of schools, has ordered the Washington Irving School closed for a week to prevent the spread of diphtheria, as cases have recently been reported among pupils of that institution.

Clinical Pediatric Meeting.—The Chicago Pediatric Society will hold a clinical meeting for physicians interested in diseases of children in Chicago on October 29-31. Clinics will be held at Wesley, Michael Reese, Children's Memorial, Cook County, Presbyterian and Anna Durand Hospitals and at the Home for Destitute Crippled Children. Arrangements also will be made for visiting the stations of the Infant Welfare Society. A more definite program with schedule will be sent to those who desire it.

Merger of Boards.—The consolidation plan outlined by the State Efficiency and Economy Commission was discussed at a joint meeting of the commission, the State Board of Health, State Water Survey, Food Commission, Illinois State Medical Society, Illinois Homeopathic Medical Association, Chicago Medical Society and Chicago College of Medicine and Surgery, September 29. The plan was generally agreed to.

Chicago

Personal.—Dr. Winfield Scott Hall and family returned from Europe September 15, after nearly a month of effort to cross belligerent countries and reach the port of embarkation. ——Dr. Albert J. Ochsner, who has been suffering from an infected finger in the Hospital of Good Shepherd, Syracuse, for several days, is reported to be improving.

Tablet Dedicated.—The Sisters of Mercy, in a celebration of the sixty-eighth anniversary of their arrival in Chicago, placed a tablet at the Mercy Hospital in memory of the late Ferris S. Thompson, who died in France nearly two years ago, leaving $300,000 to the hospital.

Demands Colony for Defectives.—Dr. William J. Hickson, head of the Municipal Psychopathic Laboratory, stated to the members of the City Council on Crime, September 26, that crimes committed by morons, sociopaths, feeble-minded and morally weak individuals, are not to be regarded as such, but that such persons should be placed in a colony maintained by the state, county or city. He estimated that the colony could be established for about $900 a bed and should have accommodations at first for 1,000 patients.

Health Ruling Sustained in Ruling on Motion-Picture Theater Ventilation.—On Sept. 22, 1913 air samples taken in a picture house showed a pronounced violation of the ventilation ordinance. As the proprietor would not comply with the order of the Health Department, his theater was closed. He obtained an injunction restraining the city from interfering with the operation of the theater until the case was tried in court and the validity of the case tested. A decision was rendered Sept. 22, 1914. The decision sustained the action of the Health Department in closing the theater, and also sustained every portion of the ordinance with exception of the relative humidity clause, which the court decided was unintelligible on account of typographical errors in printing. The Chicago *Health Bulletin* states:

> Over 2,800 pages of testimony were taken from experts, not only from Chicago, but from other states as well. All features of the ordinance were thoroughly investigated, the quantity of air required per person; the carbon-dioxid content and the matter of prevention of draft received the closest scrutiny; the methods employed in analyzing the same were gone over; in fact, samples were analyzed by the department's chemist in the presence of the master. These samples were taken in various places; in the master's room and in various other indoor localities; also samples of outside air, which were sealed and analyzed by the chemist without his having any knowledge as to where they were obtained. In short, the entire case from beginning to end was marked by its comprehensiveness and attention to detail.
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> The theater-going public is to be congratulated on the fact that every contention of the department and every provision of the ordinance were sustained in spite of the long-drawn-out fight that was made against it.

INDIANA

Personal.—Dr. Arthur E. Guedel has been appointed superintendent of the Deaconess Hospital, Indianapolis, succeeding Dr. Augustus L. Marshall, who has resigned in order to devote himself to private practice.

Housing Law to Be Enforced in South Bend.—A rigid enforcement of the Indiana housing law is to be inaugurated by the board of public health in South Bend. An investigation conducted by the mayor and Dr. Charles S. Bosenbury showed that in certain tenement districts of the city, both municipal and state housing laws were being violated.

Tuberculosis Camp Opened.—The new Tuberculosis Sanatorium for St. Joseph County, near South Bend, has been opened and now has eleven patients. When fully equipped the institution will accommodate thirty-two patients. Dr. James A. Duggan, formely of Baltimore, is superintendent of the institution. The hospital has been built at a cost of $20,000 and is located on a site of 93 acres. It will be formally opened some time this month.

Whiting Establishes New Health Service.—The city council of Whiting has made a liberal appropriation to be used by its health department in employing assistants to the commissioner. A department of hygiene and sanitary instruction has been instituted and Miss May H. Cox, a visiting nurse of Chicago, who has had experience in school work with the health department of that city, has been placed in charge of

similar work in Whiting. Dr. E. L. Dewey, the commissioner, is convinced that great good will be done in the interest of the public health and child welfare with the assistance given by the new appropriation.

Disease Prevention Day.—Disease Prevention Day held in Indiana, October 2, was everywhere characterized as a great success. In Indianapolis more people viewed the street parade than have ever assembled for any parade in that city. The good this demonstration will do as an educator of the people concerning the value of disease prevention may be regarded as enormous. As a spectacle, the parade was a tremendous success. Schools were dismissed for the occasion and everyone entered enthusiastically into the work. The Public Health Nursing Association, the Children's Aid Association, the Marion County Graduate Nurses' Association, the Indianapolis Day Nursery, the Sisters of Charity, colored hospital, the colored tuberculosis camp, the local council of women, the State Board of Health, the Manual Training High School, the musicians' union, the W. C. T. U., as well as many other organizations, contributed floats of great interest. Many business firms contributed elaborate floats representing the expenditure of much time and money. The Indianapolis Humane Society made an important contribution showing the care of animals. Many automobiles containing prominent physicians of the state, were in line as well as contingents of police, militia and schoolchildren. Dr. J. N. Hurty, secretary of the State Board of Health, gave an address on the study of disease prevention to the students of Butler College. Merchants of the state placarded their windows and in their advertisements in the daily newspapers called attention to methods of disease prevention embodied in their plants. In Brazil disease prevention day was observed in the public schools and speeches were made in the high schools. In Marion, Dr. Ada E. Schweitzer, Indianapolis, of the city department of public health, gave two addresses on the observance of disease prevention. Marion physicians spoke in all the grade schools. In Gary, Ind., several thousand persons took part in the day's observance. Five thousand were in the parade. In New Albany the demonstration included a street parade and numerous public meetings. In Fowler, Huntington and Greencastle there were large parades, and speeches by physicians and public officials. Important programs were also followed in Terre Haute, Columbus, Petersburg, Greenfield and Claremont. The entire celebration is significant of the public interest in its health being built up in this progressive state and as showing what may be accomplished when the public itself demand that health interest be primary.

LOUISIANA

Organization of New Parish Medical Societies.—The following parish medical societies have been organized: On September 24, Concordia Parish, Ferriday; the officers being Dr. Marcus C. Reeves, Vidalia, La., president; Dr. Charles H. Burley, Monterey, La., secretary and treasurer. On September 28, Washington Parish Society, Bogalusa, the following officers were elected: Dr. Elbert E. Lafferty, president; Dr. Joseph S. Kopfler, secretary and treasurer. The former society was aided in its organization by Dr. Oswald W. Cosby, councilor of the state medical society, and the latter by Dr. J. W. Lea.

Itinerary of Louisiana Health Car.—The health car of the State Board of Health of Louisiana, of which the first trip was announced in THE JOURNAL for September 26, has completed an itinerary of two weeks, during which time it visited four important states. The response on the part of the community was all that could be desired. The car contained a creditable plague exhibit, including infected and normal rats, slides and other laboratory preparations. No attempts were made to advertise the car, but during its stay in each town, Dr. Oscar Dowling, Shreveport; Dr. William H. Seemann, New Orleans; Dr. Charles C. Bass and Mr. A. J. Terhune held conferences with interested physicians. Several councilors of the state medical society joined the car in their respective districts. During its trip 6,350 visitors passed through the car, and 186 physicians. Thirteen lectures were delivered for white auditors. There were 3,860 present, and at twelve lectures for colored listeners 5,060 persons were present. Forty talks to physicians and the public were given in all.

MARYLAND

New Surgical Equipment.—Improvements have been inaugurated in the surgical department of the Maryland General Hospital, which will be entirely renovated by members of the ladies' auxiliary of the institution.

Medical Society Entertained.—The Baltimore County Medical Society was the guest of Drs. G. Carville McCormack and Frank C. Eldred, Sparrows Point, president and treasurer of the association, respectively, at an outdoor oyster roast, September 16.

Johns Hopkins Medical School Opened.—The Johns Hopkins Medical School opened October 6. A new record of registration was made, the total of new applications reaching 214. There are 30 women students, one of whom is Chinese. The four classes total 366 members, as follows: 94 in the first year, 92 in the second year, 89 in the third year and 91 in the fourth year.

To Erect Phthisis Hospital.—Steps have been taken toward the establishment of a sanatorium for the care and treatment of indigent persons suffering from tuberculosis in Montgomery County. The Montgomery County Tuberculosis Commission and the Social Service League have charge of the project. At the last session of the legislature, $5,000 was appropriated for the establishment of a sanatorium in this county provided $10,000 were raised by the citizens. The law also provides for an annual maintenance appropriation by the state on condition that the county raise double the amount. It is estimated that it will cost $15,000 to purchase a site and erect and equip the necessary buildings.

Joint Meeting of Medical Societies.—The Maryland Psychiatric Society and the Washington Society of Nervous and Mental Diseases held a joint meeting October 2, at Chestnut Lodge Sanitarium, Rockville. The program included a general discussion of paresis and tabes, opened by Dr. Sydney R. Miller, Baltimore, of the Phipps Psychiatric Clinic, followed by Drs. William Hough and William A. White of the Government Hospital, Washington; Dr. Adolf Meyer, Baltimore, of the Phipps Clinic and Dr. Tom A. Williams of Washington. Dr. Ernest L. Bullard presided and Dr. William Rush Dunton, Jr., and Dr. John J. Madigan were secretaries, respectively, of the Maryland and Washington societies.

MASSACHUSETTS

State Health Commissioner Appointed.—Surgeon Allan J. McLaughlin, U. S. P. H. S., has been appointed health commissioner of Massachusetts at a salary of $7,500 for a five-year term.

Maternity Hospital Donated.—An anonymous gift of $100,000 for the erection of a maternity hospital on the site near the Boston University School of Medicine, was announced at the opening exercises of the school.

Milk and Baby Hygiene Association Appeals for Funds.—The treasurer of the Milk and Baby Hygiene Association, Boston, announces that $8,000 is actually needed to complete the year's work of the association and if this amount is not received, curtailment of the society's efforts will be necessary.

Ether Day.—The trustees of the Massachusetts General Hospital announce that the sixty-eighth anniversary of Ether Day will be celebrated at the Hospital Amphitheatre of the outpatient department of the hospital on October 16. The address will be made by Dr. John M. T. Finney, Baltimore.

Floating Hospital Ends Work.—The Boston Floating Hospital has ended its work after a very busy season. Dr. Paul Waldo Emerson, St. Louis, house physician, has not yet decided on his work for the winter; Dr. Meredith R. Johnston, senior house officer, will go to the Children's Hospital, and Dr. Joseph A. Levek to the Massachusetts General Hospital.

Bulletin of the Massachusetts State Board of Insanity.—The board has voted to issue bulletins each month to inform the state hospital trustees, members of the several staffs and others interested with regard to the progressive and constructive work being done in individual institutions. In the first bulletin, dated September, the announcement is made that it is not the policy of the board to approve the appointment of any staff physicians who have not had previous experience in the care or treatment of the mentally ill or who have not taken special courses in such work. Arrangements have been made with the psychopathic department of the Boston State Hospital to give special courses of from three to six months to prospective candidates who could not otherwise qualify. Such men will be taken as interns and given free instruction and board but no salary until they are fitted for positions as members of the staffs. If a candidate seems unfitted for the position at the end of from three to six months, he is to be definitely rejected. The board has undertaken a survey of outpatient work by the hospitals and now recommends that such work be extended and made to cover the care of discharged patients. The following changes are

announced as having occurred in staffs of the different institutions during August: Dr. Thomas H. Haynes resigned from the psychopathic department; Dr. William H. Lane, Waverly, resigned from the Massachusetts School for the Feeble-Minded; Dr. R. Grant Barry, King Park, N. Y., appointed physician at Worcester Hospital; Dr. Chester A. Van Cor appointed physician at Gardner Colony.

MISSISSIPPI

Home from Abroad.—Dr. Donald P. Street, Vicksburg, has returned after a three-months trip abroad, and has resumed practice.

State Public Health Meeting.—The annual convention of the Mississippi Public Health Association will be held at Jackson, October 27 and 28, under the presidency of Dr. Walter S. Leathers, University. Among the more prominent topics for discussion are malaria, bubonic plague and tuberculosis.

MISSOURI

Lack of Medical Inspection Blamed for Diphtheria.—Seven cases of diphtheria were found in a single day near the end of September in the Irving School, Kansas City. The health department attributes the danger of an epidemic to false ecomony on the part of the city administration. Medical inspection, such as is required in other cities of the Middle West, would probably have averted the danger.

Free Dispensary Established.—A free clinic and dispensary for children and mothers has been established in Kansas City. The dispensary will be for the treatment of children up to 14 years of age, and will furnish instructions to mothers regarding the proper care of infants. Especial attention will be given to treatment of eye, ear nose and throat diseases. The fifth floor of the Waterworks Building has been leased for its use.

NEVADA

Home from Abroad.—Dr. A. Miniggio, Reno, returned September 22, after a year in Italy.

State Society Meeting.—The eleventh annual meeting of the Nevada State Medical Association will be held in Reno, October 13 to 15, under the presidency of Dr. Arthur P. Lewis, Reno.

New Hospital.—Plans have been made and bids have been asked for the construction of the new hospital at Asheville. The building is to be located near the present buildings of St. Joseph's Infirmary, it is to be brick, reenforced concrete and to cost $100,000. It will be under the charge of the Sisters of Mercy.

NEW JERSEY

Free Vaccination to Be Discontinued in Trenton.—The health department discontinued free vaccination September 23. It was estimated that 8,000 persons had been vaccinated during the summer.

NEW YORK

New York City

Sail for Red Cross Duty.—Drs. Archibald McI. Strong, Sumner Everingham, Robert F. Corry, Lester B. Rogers, Richard Derby and Joseph P. Hoguet have sailed for Europe to join the field staff of the American Ambulance, Paris.

Harvey Society Lecture.—The first lecture of the Harvey Society series for the year is given at the New York Academy of Medicine, October 10, by Dr. Frederick P. Gay of the University of California, Berkeley, on "Experimental Studies on Methods of Antityphoid Immunization."

Guard Against Cholera.—On account of the report of the appearance of cholera in epidemic form in Europe, Dr. Joseph H. O'Connell, health officer of the Port of New York, has instructed boarding officers to make careful inspection of all vessels, passengers and crews coming from infected ports.

Septic Sore Throat Reportable.—Owing to the numerous epidemics of septic sore throat that have occurred during the past year, and especially on account of the recent experience at Rockville Center, L. I., the Sanitary Code now requires that this disease be reported to the Department of Health. It is incidentally pointed out that these epidemics furnish an additional argument in favor of the pasteurization of the milk-supply.

Personal.—Dr. Oliver W. H. Mitchell, formerly of the University of Missouri, has been appointed professor of bacteriology at the College of Medicine of Syracuse University. Dr. Edward D. Clark, Buffalo, has been appointed assistant professor of preventive medicine at the same institution and Dr. Howard L. Van Winkle, Glen Olden, has been appointed instructor in preventive medicine.——Dr. Lawrence S. Bartlett, Rochester, and Dr. and Mrs. James M. Wicks, Jamaica, L. I., have sailed for Europe.

Adenoid and Tonsil Operations.—There are now four clinics maintained by the Department of Health for the treatment of schoolchildren with adenoids and enlarged tonsils who are unable to afford a private physician. These clinics, which were formerly only open three days a week, are now in operation every day. During the week ending Sept. 5, 1914, 137 nose and throat operations were performed at these clinics. The average number of operations performed for three weeks preceding the inauguration of daily operations was seventy-seven.

Mayor Upholds Dog Order.—After a conference with Dr. Sigismund S. Goldwater, Mayor Mitchell announced that he stands on the side of the health commissioner in regard to the order of the Health Department that all dogs must be muzzled or kept on the leash. It is stated that this order, which has aroused considerable antagonism, is not necessarily permanent, but seemed necessary because of the increase in rabies. It was also explained that the order of the department forbidding the keeping of chickens within 75 feet of a dwelling was aimed at tenement dwellers and not at suburbanites.

Notifiable Diseases in New York City.—An amendment to the Sanitary Code passed the meeting of the Board of Health on August 25, requires that every case of infectious disease must be reported to the Department of Health within twenty-four hours from the time it is first seen. There are now twenty-nine infectious diseases reportable in this city. They are as follows: anthrax, asiatic cholera, diphtheria (croup), dysentery (epidemic), epidemic cerebrospinal meningitis, glanders, gonorrheal ophthalmia, hookworm disease, leprosy, malarial fever, measles, mumps, paratyphoid, plague, acute anterior poliomyelitis, pulmonary tuberculosis, rabies, rubella (German measles), tetanus, trachoma, tuberculous meningitis, typhoid fever, varicella (chicken-pox), whooping-cough and yellow fever.

Supervision of Typhoid.—All cases of typhoid fever reported in the borough of the Bronx will hereafter be investigated by the district nurses of the Bureau of Infectious Diseases. In every case the district nurse will be expected promptly to secure the epidemiologic data called for by the department's history card. In addition to this, she must learn what persons are exposed to infection and how many of these would accept immunization. In every case the attending physician will be requested by telephone to permit the Department of Health to immunize the exposed individuals, or to do so himself, the department offering to furnish the necessary culture free of charge. When no trained nurse is in attendance on a case, the nurse must make sure that excreta are properly disinfected and disposed of and that the person caring for the patient does not cook or handle the food for the family. If the family cannot carry out the necessary requirements, it may be necessary to have the sanitary policeman warn the family or forcibly remove the patient to a hospital. Wherever two or more families at different premises have typoid fever and the same milk-supply is being used, an immediate investigation of that milk-supply will be made.

NORTH CAROLINA

Antityphoid Vaccination.—The State Laboratory of Hygiene reports a heavy demand for free antityphoid vaccination during the summer. During the early part of the summer, the demand exceeded the power of the laboratory to supply it. Arrangements for increasing the output have been made in anticipation of an extended demand from schools and colleges at the time of their opening.

OKLAHOMA

Diphtheria Antitoxin to Be Distributed by the State.—Dr. J. C. Mahr, state health commissioner, is preparing to distribute diphtheria antitoxin through the local drug stores. It will be supplied free to those unable to pay for it and at reduced rates to others.

PENNSYLVANIA

Personal.—Dr. George R. S. Corson, Pottsville, has been elected secretary of the Anti-Tuberculosis Society of Schuylkill County.——Dr. Harry W. Salus, Johnstown, has been appointed state medical inspector for Cambria County.——Dr. James P. Brallier, Alexandria, has returned from Europe.

Hospital and Sanatorium Notes.—The Ladies' Auxiliary of the Columbia Hospital has decided to purchase a Roentgen apparatus for use in that institution.——The Neversink

Mountain Sanatorium reports that it has twenty-five patients in the institution and an awaiting list of twenty-eight, and has asked the Burke County Tuberculosis Society at the annual meeting to increase its membership that these sufferers may have the benefit of the treatment.——The State Sanatorium at Hamburg was opened to receive patients the second week in September.

Optometrists Win Legal Point.—Under an equity decision handed down by President Judge Wilson, the Pennsylvania Optometrists' Association, claim to have won the first round of their fight against the State Board of Medical Education and Licensure, which is endeavoring to bring them under absolute medical supervision. The court by this decision admits merely that the optometrists have a right to an injunction if they can prove that all the claims put forward in their original bill are just. These claims will be the subject for a further equity hearing, the date for which has yet to be set. As the state board insists that the optometrists be licensed after November 1, it is expected that a hearing will be held this month.

State Association Meeting.—The Medical Society of the State of Pennsylvania held its sixty-fourth annual meeting concerning which note was made last week in Pittsbugh, September 22 to 24, under the presidency of Dr. Edward B. Heckel, Pittsburgh. The following officers were elected: president, Dr. John B. McAlister, Harrisburg; vice-presidents, Drs. G. Franklin Bell, Newberry; Walter S. Stewart, Wilkes-Barre; Jacob R. Lehman, Mountville, and Otto C. Gaub, Pittsburgh; secretary, Dr. Cyrus L. Stevens, Athens (reelected); assistant secretary, Dr. William H. Cameron, Pittsburgh; treasurer, Dr. George W. Wagoner, Johnstown (reelected); trustees, Drs. William T. Sharpless, West Chester; Frederick L. Van Sickle, Olyphant, and Alem P. Hull, Montgomery. The section on medicine elected Dr. Thomas G. Simonton, Pittsburgh, chairman, and Dr. J. Wesley Ellenberger, Harrisburg, secretary; the section on surgery, Dr. Floyd E. Keene, Philadelphia, chairman, and Dr. Albert R. Matheny, Pittsburgh, secretary; and the section on eye, ear, nose and throat, Dr. Robert Milligan, Pittsburgh, chairman, and Dr. John F. Culp, Harrisburg, secretary. Philadelphia was selected as the place of meeting for 1915.

Philadelphia

Medical Institutions.—A one-story addition, 30x40 feet, to the accident ward of the Methodist Episcopal Hospital, is to be built. The structure is to be of brick and terra cotta and will cost about $6,000.

Pemphigus, Not Leprosy.—Careful investigation by the health authorities into the cause of the death of Owen Hall, supposed to have died from leprosy, has demonstrated that the death was due to pemphigus.

Appropriation for Hospitals.—Director Richard H. Harte of the Department of Health received from councils, September 17, an appropriation of $272,000 for the improvement of the Municipal Hospital, the completion of the Byberry Farms and the City Institution at Holmesburg.

For Sane Fourth.—The executive committee of the Reconstructed Fourth Association met at City Hall, September 30, and the following officers were elected: chairman, George McCurdy, president of common council; vice-chairman, Mrs. Samuel B. Jarden; honorary vice-chairman, Mrs. Rudolph Blankenburg; treasurer, the Rev. H. W. Hathaway, and secretary, James J. Hiatt.

Rat Extermination.—Director Richard H. Harte of the Department of Public Health and Charities invited several hundred business men to a conference on the extermination of rats, September 28. Assistant Surgeon-General Leland E. Cofer, Washington, Surgeon Fairfax Irwin, U. S. P. H. S., addressed the meeting and a special appeal was made for the cooperation of business men and property owners in the campaign against rats.

Personal.—Dr. Frank H. Hustead has been elected surgeon-general of the American Veterans of Foreign Wars.——Dr. Hunter W. Scarlet is on duty at the American Hospital in Paris.——Dr. Arthur A. Stevens has been appointed attending physician at the Philadelphia General Hospital, to succeed Dr. Augustus A. Eshner, resigned.——Dr. James M. Anders, who was in Frankfort, Germany, when war was declared, arrived home September 22.

Regional Tuberculosis Conference in Philadelphia.—The first North Atlantic States Conference on Tuberculosis, including New York, New Jersey, Pennsylvania, Maryland, Delaware, Virginia and the District of Columbia, will be held in Philadelphia under the direction of the National Association for the Study and Prevention of Tuberculosis on Friday, October 16. The executive secretary states the object of the conference is "the mobilization of those who are engaged in the war against tuberculosis for the coming fall and winter campaign which we are planning to wage against this disease."

Colleges Open.—The opening exercises of Jefferson Medical College were held September 24, at the Clinical Amphitheatre. William Porter, president of the board of trustees, presided, and the introductory address to the ninetieth annual session was delivered by Dr. Jacob Parsons Schaeffer, New Haven, Conn., the newly elected professor of anatomy.——The University of Pennsylvania officially began its one hundred and seventy-fifth year on September 25, when the officers, faculties and entire undergraduate body assembled in Weightman Hall for the historic first chapel exercises. Provost Edgar F. Smith, Vice-Provost Josia H. Pennyman and the deans of the various departments addressed the students.

Faculty Changes.—Dr. Herbert H. Cushing has been made professor of practical anatomy. Dr. Ardrey W. Downs, professor of experimental physiology; Dr. Vernon K. Suydam, professor of physics; Prof. Charles E. Vanderkleed, professor of analytical chemistry; Dr. John H. Small, associate professor of bacteriology; Dr. Eugene A. Case, associate professor of pathology; Dr. Philipp Fischelis, associate professor of histology and embryology; Dr. Guy Hinsdale, associate professor of climatology, and Dr. Arthur C. Morgan, associate professor of medicine; Dr. J. Stewart Rodman and Dr. John J. Gilbride, associate professors of surgery; Drs. Howard L. Jameson and Andrew Callahan, associates in medicine, and Dr. Robert F. Ridpath, associate in laryngology, in the Medico-Chirurgical College of Philadelphia.

VERMONT

Epidemic of Infantile Paralysis.—The present epidemic of infantile paralysis in this state, which has been running for eight or nine weeks, exceeds that of any previous outbreak of the disease here in number of cases and mortality rate. One hundred and forty cases have been reported since August 15. The mortality in the state has been about 20 per cent. The area affected is a large one. The disease is especially prevalent in the northern part of the state, from Rutland to the Canadian line. The largest number of cases has occurred in Barton (40) and the next largest in Burlington (37). The State Board of Health has succeeded in keeping all the cases under strict quarantine and is carefully keeping the history of all cases.

WASHINGTON

Personal.—Dr. William A. Taylor, Ellensburg, and Dr. and Mrs. W. G. Cassels, Seattle, have returned from abroad.

Medical Defense Fund Low.—At the annual meeting of the Washington State Medical Association, the legal defense fund dues were raised from $5 to $10 because of the increase in malpractice suits due to the operation of the industrial insurance law.

State Association Meeting.—The twenty-fifth annual meeting of the Washington State Medical Association was held in North Yakima, September 21 to 23, under the presidency of Dr. Cornelius J. Lynch, North Yakima, and the following officers were elected: president, Dr. Casper W. Sharples, Seattle; president-elect, Dr. John R. Brown, Tacoma; vice-presidents, Drs. Harry E. Allen, Seattle, and Charles F. Eikenbary, Spokane; trustees of first district, Drs. James R. Yocom, Tacoma, and Richard J. O'Shea, Seattle; trustees of second district, Drs. Frederick Epplen, Spokane; Frank E. Culp, Wenatchee; and delegates to the American Medical Association, Drs. Edward A. Rich, Tacoma, and Guy E. Peterkin, Seattle. Tacoma was chosen as the place of meeting for 1915.

GENERAL

Red Cross Needs Funds.—The American National Red Cross reported that of the $325,000 received up to September 26, $280,000 has already been expended and that more funds are urgently required.

Ohio Valley Physicians to Meet.—The annual meeting of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. Argus B. Willmoth, Louisville.

Cholera in Manila.—On September 25 it was reported from Manila that an outbreak of cholera had occurred, the first in twelve years, and nearly one hundred cases have developed in

two weeks and fifteen deaths, all natives, have been recorded. Every district of the city is infected with the exception of the American residential districts of Ermita and Malate.

Meeting of Mississippi Valley Physicians.—The fortieth annual meeting of the Mississippi Valley Medical Association will be held in Cincinnati, October 27 to 29, under the presidency of Dr. D'Orsay Hecht, Chicago. The oration in medicine will be given by Dr. Charles F. Hoover, Cleveland, and that in surgery by Dr. Lewis S. McMurtry, Louisville. The headquarters, places of meeting and exhibit hall are all in the Hotel Sinton.

Plague in New Orleans.—Since the report in THE JOURNAL of October 3, the plague situation has changed but slightly. The total number of rodents captured up to September 26 was 96,794; the total number of rodent cases up to October 1 was 177. The death is reported of case number 26, Clemence Alexander, who died at the Emergency Hospital, Sept. 30, 1914. This case was reported as suspicious on September 21, and diagnosis confirmed September 22. The total number of deaths up to October 1 is 8.

China Appeals for Aid for Sufferers from Famine and Drouth.—The American Red Cross has transmitted to the state department an appeal from China for help. Famine and drouth are causing great disturbances in Kiangsu, Hunan and other provinces. Conditions are serious in Kwangtung where the loss of human and animal life has been great. The Red Cross was prompted to take up the matter by a petition presented to the American minister in Pekin by merchants of Kwangtung province residing in Shanghai.

Social Hygiene Conference.—In connection with its annual meeting in New York City, October 9, the American Social Hygiene Association has arranged a conference on social hygiene jointly with the Society of Sanitary and Moral Prophylaxis. The program includes addresses on social hygiene in relation to departments of public correction, life insurance, the church and its organizations, boys' and girls' organizations, departments of public health, education and the like. The public sessions will be held at the Assembly Hall of the Metropolitan Life Insurance Company's Building. A visit to the venereal-disease clinic of the New York City Department of Health has been arranged.

New Refrigerators for Conveying Milk.—The Baltimore and Ohio Railroad has installed four sanitary dairy refrigerator cars to handle milk daily between points in Ohio and Pittsburgh. Health authorities and railroad officials, who have examined the new cars, state they will retain uniform temperature for forty-eight hours with but a single icing when the thermometer registers 90 degrees and that the growth of bacteria while milk is in transit is inhibited. The cars are so constructed as to provide hermetic sealing and are finished in white enamel on the inside so they may be easily flushed. In each end are ice-bunkers extending from floor to roof and containing six brine tanks in which are carried ice and salt.

Meeting of Military Surgeons.—The twenty-third annual meeting of the Association of Military Surgeons of the United States was held at Cincinnati, September 29 to October 2. In the absence of Brigadier General Charles Adams, M. C., Ill. N. G. (retired), Col. Jefferson R. Kean, M. C., U. S. A., presided. A committee on membership was appointed, composed of one officer from each of the public services and one from the National Guard of each state. Washington, D. C., was selected as the next place of meeting. The following officers were elected: president, Col. Jefferson R. Kean, M. C., U. S. A.; vice-presidents, Surgeon-General Rupert Blue, U. S. P. H. S.; medical inspector, George A. Lung, U. S. N., and Col. Henry Allers, M. C., N. J. N. G., Harrison, N. J.; and treasurer, Major Herbert A. Arnold, M. C., Pa. N. G., Ardmore, Pa. (reelected).

FOREIGN

Guatemala Raises Quarantine.—The Guatemala government has raised the seven-day quarantine regulation declared against New Orleans at the outbreak of bubonic plague.

Trachoma Inspection Lax in Porto Rico.—On September 17 a proclamation was issued by the director of sanitation suspending examinations of the eyes of schoolchildren for trachoma and stating that eyes will be examined gradually throughout the year. The children will be admitted to the schools without the certificate that they are free from this disease. In an open letter to the governor, Dr. Molina de St. Remy, a member of the Board of Medical Examiners at San Juan, protests against this laxity and points out that trachoma is practically epidemic in the island.

Jubilee of Public Health Service in Switzerland.—When in 1889 Dr. Schmid was appointed chief of the newly organized public health service in Switzerland, the enforcement of the regulations to control epidemics was all the work laid out for it. But during the twenty-five years since he has been constantly enlarging its field of work. The present high efficiency of the service, its pure-food work, the higher requirements for a medical license, the widespread system of isolation hospitals and disinfection stations, and the revision of the Swiss Pharmacopeia are all due in large measure to Schmid's tireless zeal, and in token of appreciation a banquet was recently tendered him on the completion of his twenty-five years of service. The International Antituberculosis Association sent its secretary from Berlin to Berne to do him honor, and numerous other local national and international organizations were represented at the jubilee.

CANADA

News Items.—A retired French-Canadian doctor has promised $50,000 toward the cost of equipping a French-Canadian regiment for war services.

University News.—Dr. Richard A. Reeve has resigned from the professorship of ophthalmology in the University of Toronto and has been succeeded by Dr. James M. MacCallum. Dr. George R. McDonagh has resigned from the professorship of otolaryngology and has been succeeded by Dr. David J. Gibb Wishart.

Professor Leathes Leaves Toronto.—Dr. John B. Leathes, professor of pathological chemistry in the University of Toronto, leaves Toronto in December for Sheffield, England, where he has been appointed professor of physiology in the University of Sheffield. Dr. Leathes came to Toronto only a few years ago from London where he was pathological chemist in the Lister Institute. He was one of the four Fellows of the Royal Society at the University of Toronto.

Canada's First Contingent.—With the First Canadian Contingent sailing some time last week went three field hospitals, one clearing hospital, two stationary hospitals and two general hospitals. The medical personnel of a general hospital (520 beds) is one commanding officer, nineteen medical officers, including one registrar; one matron and ninety sisters in the nursing staff. A stationary hospital consists of 200 beds with one officer commanding and six other medical officers. Of the nursing staff there is one matron and sixteen sisters.

Baby-Saving Campaign in Toronto.—During June, July and August, 1914, there were 200 less infant deaths in Toronto than in the same period in 1913. This fully justifies the establishment in connection with Toronto's Department of Health, of a section of child hygiene. Ten baby clinics have been at work throughout the summer, at each of which doctors and nurses have been in attendance twice a week. The attendance at these clinics doubled each month; and during the last week in September there were in attendance a total of 952. Over 2,318 babies were regularly taken for boat trips during the past summer. A pamphlet, printed in English, Italian and Hebrew—The Care of the Baby—is supplied to all mothers.

WAR NOTES

Gasoline in Berlin.—The distributing company announces that gasoline will be supplied to physicians who absolutely have to use their own cars.

English Medal Melted Up for Relief Work.—Von Behring has donated the Harben gold medal, valued at $500, to the city of Marburg to be expended for relief work.

Fatalities Among Physicians at the Front.—German exchanges up to September 10 had listed twelve medical men killed on the firing line, including Dr. Thelen on the man-of-war *Magdeburg*, which was blown up rather than surrender, and also three medical students.

Contribution for American Red Cross Hospital in Munich.—A contribution of $1,000 from John A. Roebling, Bernardsville, N. J., has been received by the Red Cross to be transmitted to Ambassador Gerard in Berlin for the maintenance of an American Red Cross hospital for the care of the wounded in Munich.

British Hospital Ship Fitted Up.—The Grand Trunk Pacific steamer *Prince George* has been requisitioned by the British admiralty as a hospital ship. The dining-room has been turned into a hospital ward and equipped with operating-tables. Elevators have been installed to permit the sick and wounded to be handled with the least possible discomfort.

Internists Appointed Consultants on the German Army Medical Staff.—Up to September, only surgeons and hygien-

ists had been appointed consultants on the general medical staff of the Germany army, but then Kraus and Krehl were called to serve in the chief medical staff for the duration of the mobilization and His was made chief of staff (*Generaloberarzt*).

Hospital Ship Donated to Great Britain by Indian Rulers.—The Maharaja Scindia of Gwalior has offered to the Viceroy of India on behalf of himself and the Nizam of Hyderabad, the Begum of Bhopal, the Maharajas of Jodhpur, Rewah and Datia, the Rajas of Dhar, Sitamau, Jhabua and Sailana and other ruling chiefs of India, a hospital ship of 300 beds to be named *Loyalty*.

Quacks in the War.—In England the war seems to have stimulated quack medical vendors to make special efforts to attract public attention by way of war advertisements. In its issue of September 26, the *British Medical Journal* calls attention to the great dangers to the English army from the advice of these quacks that soldiers should treat themselves for diarrhea and various venereal complaints.

The British Red Cross Society.—The British Red Cross Society is doing adequate work in connection with the care of British troops. The unit at Boulogne has covered nearly the whole of the grounds traversed by the British in their retreat toward Paris. The society has thirty motor ambulances already on the continent and fifty more are to be sent. A hospital of 400 beds is being established at Rouen.

Free Medical Attendance for Dependents of British Soldiers.—The British government has accepted an offer from the British Medical Association and the Pharmaceutical Society of Great Britain to give free medical attendance and drugs at cost price to dependents of men serving with the colors whose circumstances justify such relief. The service will be administered through local relief committees which are now being formed in counties, boroughs and urban districts.

Character of the Wounds.—The *Berliner med. Wochenscrift* of September 14 states that the French surgeons, Delbet, Raymond, Tuffier and Doyen, have publicly commented on the mild character of the wounds among the French soldiers when vital organs are not involved, and their rapid healing. The same comment as to the mildness of the wounds and the rapid healing among the wounded is made in the official report of the German surgeon-general, referring to the wounds made by the regulation bullets. He states further that the fifth week of the war has passed without epidemics developing in the German army. The first-aid packages have proved efficient. The bandages applied at the front were still in place when the wounded were delivered to the base hospitals, and a large proportion of the wounded are already recovering and clamoring to be sent back to the front.

Prophylaxis of Epidemics in Germany.—At Königsberg in eastern Prussia every case, even suspected of being typhoid, typhus or dysentery, must now be reported to the authorities, and also every bacilli carrier. Their dwelling places as also all houses where there is a case of scarlet fever or diphtheria must be marked with a yellow lantern and a placard bearing the name of the disease. THE JOURNAL has mentioned at times the systematic campaign that has been carried on during the last decade in southwestern Prussia to stamp out typhoid fever. A series of bacteriologic stations were founded and they have sought out and tried to keep under control every bacilli carrier, and have thus materially reduced typhoid in that district. This part of the country was selected for this attempt at a campaign of extermination on the advice of Robert Koch that it might be well to have this area free from typhoid in case of another war with France.

German Patents and Trademarks in England.—The English comptroller of patents has been holding sittings concerning the question of revoking German patents and regranting them to English manufacturers. Early in the proceedings the comptroller said that the general principle by which the court would be guided, was that unless it would prove to be for the public interest, it would not recommend the spread of trade by transfer to other businesses of the device trademarks which were known to be associated with foreign firms. The object was not to confiscate anyone's property, but merely to enable business to go on, which would not be possible without the suspension of patents. Among the applications heard from various British manufacturers were one to take over the manufacture and sale of salvarsan, one to take over the manufacture and trademark of hexamethylenetetramin as urotropin and another for the manufacture of lysol. No decisions were rendered.

PARIS LETTER

PARIS, Sept. 24, 1914.

Organization of the Sanitary Service

From the beginning of the war temporary hospitals and ambulances have naturally increased. These improvised establishments have not always been perfect. Some have had insufficient equipment and others insufficient staff. It might be preferable to have fewer ambulances but better regulated ones, especially so far as the removal of wastes and the sterilization of soiled linen is concerned.

Medical students who have defects of sight which prevent them from being useful in the army service might be utilized in the hospitals and ambulances. So also might non-military physicians whose services have been rejected by the military authorities because of their age or for other reasons. They might, however, be more useful than some of the Red Cross ladies who have no experience but who flaunt their nurses' blouses and aprons on the streets and in the restaurants.

The following note appears in the daily paper:

"Our illustrious collaborator, Paul Bourget, whose medical knowledge is well known, is putting this at the service of our wounded. Every morning he may be seen at the Clermont-Ferrand Hospital dressed for service. He is especially charged with the duty of giving chloroform to those who are undergoing surgical operations."

I believe that the professional anesthetist would be worth more here than M. Paul Bourget, whose medical knowledge has yet to be proved.

Definite Results of the Census of Paris

The census which I mentioned in my previous letter has been finished. The population now consists of 1,807,044 inhabitants, or 1,026,307 less than in 1911, and is no more than about two-thirds (63 per cent. to be exact) of what it is in normal times. There are 949,087 women against 585,486 men. There are also 278,471 children of whom 30,906 are less than 15 months old.

The Water-Supply

Fears have been expressed lest Paris might be deprived of suitable drinking-water because of the great battle which has recently occurred in the vicinity. These fears have not been realized. The measures taken have assured to the population of Paris and the suburbs sufficient potable water. The drinking-water is analyzed several times a day. If it should fail, water from the Seine and the Marne will be treated by hypochlorites for use.

Sanitation of the Battle-Field

About 1,500 firemen, under the direction of the service of military sanitation, have gone over the field of the battle of the Marne to carry out measures of sanitation intended to relieve Paris of all danger of infection.

Marriages

JAMES CASPER NEGLEY, M.D., Los Angeles, Cal., to Miss Katherine Constance Collins of New York City, at Los Angeles, recently.

EDWARD MICHAEL WILLIAMS, M.D., Norway, Iowa, to Miss Beryl Camery of Traer, Iowa, at Cedar Rapids, Iowa, September 16.

ISRAEL LEOPOLD GLUSHAK, M.D., Washington, D. C., to Miss Annie Gordon of Glasgow, Scotland, August 5.

RAYMOND WRIGHT WHITTIER, M.D., to Miss Imogene Cory, both of Mora, Minn., at Minneapolis, September 20.

HOWARD ENGLER HARMAN, M.D., Leetonia, Ohio, to Miss Grace Fanny Burger of Baltimore, Md., October 7.

ARTHUR JAMES MCCARY, M.D., Chicago, to Miss Arleen Winifred Joannes of Green Bay, Wis., October 8.

JOSEPH WILEY HARRISON, M.D., to Miss Alta M. Haxton, both of Guthrie Center, Iowa., September 24.

WYMAN H. FISHER, M.D., to Miss Minnie Rosenbaum, both of Wanatah, Ind., at Chicago, September 23.

DANIEL IRWIN ALLER, M.D., Merced Falls, Cal., to Miss Merle Orr of Redding, Cal., September 23.

JAMES EDGAR YARBROUGH, M.D., to Miss Virginia Coffey, both of Erick, Okla., September 27.

CHARLES B. COWAN, M.D., to Mrs. Mary C. Morris, both of Seattle, Wash., September 19.

Deaths

Lemuel Bolton Bangs, M.D. College of Physicians and Surgeons in the City of New York, 1872; formerly a member of the American Medical Association; a Fellow of the New York Academy of Medicine; consulting surgeon to St. Luke's, Bellevue, City, St. Vincent's and Methodist Episcopal hospitals; professor of genito-urinary surgery in the University and Bellevue Hospital Medical School from 1898 to 1901; president of the American Association of Genito-Urinary Surgeons in 1895; died at his home in New York City, October 4, aged 72.

Solon Marks, M.D. Rush Medical College, 1853; for more than sixty years a practitioner of Milwaukee; one of the organizers of the American Medical Association and American Surgical Society, and for several years president of the State Medical Society of Wisconsin; division surgeon and chief surgeon of the Army of the Cumberland during the Civil War; emeritus professor of military surgery, and fractures and dislocations in the Wisconsin College of Physicians and Surgeons; died at his home in Milwaukee, September 29, aged 87.

Morris Longstreth, M.D. University of Pennsylvania, Philadelphia, 1869; Jefferson Medical College, 1876; of Cambridge, Mass.; a Fellow of the American Medical Association, American Association for the Advancement of Science and Association of American Physicians; for many years a practitioner of Philadelphia; professor of pathological anatomy in Jefferson Medical College until 1904, and a member of the attending staff of the Pennsylvania Hospital; died in Barcelona, Spain, September 19, aged 68.

Washington Emil Fischer, M.D. Washington University, St. Louis, 1871; a Fellow of the American Medical Association; clinical professor of medicine in his Alma Mater; consulting physician to Washington University Hospital, St. Luke's Hospital and St. Louis Skin and Cancer Hospital, and one of the founders and president of the medical board of the latter institution; died at his home in St. Louis, September 15, from carcinoma, aged 64.

Charles Francis Gladding, M.D. California Eclectic Medical College, Los Angeles, 1897; a Fellow of the American Medical Association; for nearly forty years a practitioner of California and once physician to the state penitentiary, Folsom; a member of the Berkeley Board of Health; died at his home in Oakland, Cal., September 15, from cerebral hemorrhage, aged 58.

Theron Augustus Wales, M.D. University of Pennsylvania, Philadelphia, 1873; a member of the Medical Society of the State of New York; one of the leading practitioners of Elmira, N. Y.; past president of the Third District Medical Society, Chemung County Medical Association and Chemung County Medical Society; for many years examining surgeon for pensions and a police commissioner; died at his home in Elmira, September 9, aged 72.

John Hale Taylor, M.D. University of Buffalo, N. Y., 1869; a Fellow of the American Medical Association; president of the Orleans County, N. Y., Medical Society in 1892; coroner of Orleans County for fifteen years and for one term president of the village of Holley, N. Y., where he had practiced for forty-five years; died at his home September 23, ten weeks after a fall in which he sustained a fracture of the hip, aged 70.

James Kossuth King, M.D. College of Physicians and Surgeons in the City of New York, 1877; a Fellow of the American Medical Association; one of the founders and for twenty years medical director of the Glen Springs Sanitarium, Watkins, N. Y.; died at his home in Watkins, September 20, from cerebral hemorrhage, aged 65.

Cornelius S. Van Etten, M.D. University of Pennsylvania, Philadelphia, 1873; a Fellow of the American Medical Association; for thirty-eight years a practitioner of Rhinebeck, N. Y., and for many years health officer of that town; died at his home in New York City, September 10, aged 68.

Jacob Trush, M.D. Washington University, St. Louis, 1865; a Fellow of the American Medical Association and of the Cincinnati Academy of Medicine; died suddenly at his home in Clifton, Cincinnati, September 11, from heart disease, aged 77.

Sam C. Pursley, M.D. Medical College of Georgia, Augusta, 1868; a Confederate veteran and a well-known physician of Jones County, Ga.; died at his home in Clinton, Ga.; September 11, aged 70.

Wilton Marcellus Mason, M.D. California Eclectic Medical College, Los Angeles, 1891; of Lodi, Cal.; a Fellow of the American Medical Association; for many years a member of the State Board of Medical Examiners; died in the Morton Hospital, San Francisco, September 19, from aneurysm of the arch of the aorta, aged 49.

Shannon P. Peck, M.D. College of Physicians and Surgeons, Baltimore, Md., 1877; a member of the West Virginia State Medical Association; twice mayor of Hinton, W. Va., and for several years chief surgeon of the Chesapeake and Ohio System; died suddenly, September 16, while driving with a friend in his motor car.

Samuel Fairbank Mellen, M.D. New York University, New York City, 1884; a member of the Medical Society of the State of New York and American Medico-Psychological Society; assistant physician to the Hudson River State Hospital, Poughkeepsie, N. Y.; died in Poughkeepsie, July 15, aged 60.

Archibald Thompson Davison, M.D. Harvard Medical School, 1871; a member of the Massachusetts Medical Society; for many years a practitioner of Dorchester, Boston, and for six years a member of the Boston school committee; died at his home in Cambridge, Mass., September 19, aged 70.

Clifton N. Infield, M.D. New York Homeopathic Medical College, New York City, 1883; of Hudson Falls, N. Y.; a member of the Medical Society of the State of New York; died in the Samaritan Hospital, Troy, N. Y., September 16, after an operation for disease of the stomach.

William Francis Byrns, M.D. Georgetown University, Washington, D. C., 1873; of Washington, D. C.; a Fellow of the American Medical Association; died suddenly at the home of his brother in Ware, Mass., September 19, aged 67.

James Neal Murdoch, M.D. University of Pennsylvania, Philadelphia, 1852; for many years a practitioner and druggist of Parkersburg, W. Va.; died at his home in that city, September 14, aged 86.

Burtus M. Keeney, M.D. Long Island College Hospital Brooklyn, N. Y., 1864; for many years a practitioner of New York City; died at his home in Waterford, Conn., September 12, aged 77.

Martin Thaddeus Joyce, M.D. College of Physicians and Surgeons, Chicago, 1903; of Waterloo, Wis.; died in a hospital in Chicago, after an operation for appendicitis, September 6, aged 38.

James Reid Hinkle, M.D. New York University, New York City, 1860; a surgeon of Indiana Volunteers during the Civil War; died at his home in Sullivan, Ind., September 15, aged 82.

Albert M. Finch (license, Indiana, 1897), of Jamestown, Ind.; died in a hotel in Crawfordville, Ind., September 9, it is believed from the effects of an overdose of a drug, aged 62.

Maude L. Dunn Erstling, M.D. National Medical University, Chicago, 1905; died at her home in Chicago, August 31, from infection following an operation, aged 44.

William H. Johnson, M.D. Medical College of Indiana, Indianapolis, 1877; a veteran of the Civil War; died at his home in Lincoln, Neb., September 5, aged 68.

William Thomas Wood, M.D. Western Pennsylvania Medical College, Pittsburgh, 1908; died at his home in Toledo, Ohio, September 9, from nephritis, aged 39.

Lawson A. Duthie, M.D. Physio-Medical College of Indiana, Indianapolis, 1900; died at his home in Indianapolis, September 12, aged 47.

William Monroe Mierley, M.D. Medico-Chirurgical College of Philadelphia, 1891; of Ottumwa, Ia.; died in that city, September 13, aged 41.

William Samuel Sanders, M.D. Missouri Medical College, St. Louis, 1875; died at his home in Clarence, Mo., September 6, aged 64.

Guy H. Hildebrand, M.D. King Eclectic Medical College, Des Moines, Ia., 1889; died at his home in Clearwater, September 7, aged 62.

Bernhard V. Lenderink (license, Michigan, 17 years of practice, 1900); died at his home in Holland, Mich., September 12, aged 77.

Manoah M. Woodward, M.D. Hospital College of Medicine, Louisville, Ky., 1885; died at his home in San Angelo, Tex., September 7.

Wilber Gray Smith, M.D. University of Maryland, Baltimore, 1880; died at his home in Oakland, Cal., August 6, aged 55.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DUKET REDIVIVUS

A Gold Brick Consumption Cure Is Offered Las Vegas —and Declined

Peter P. Duket, the "consumption cure" faker, is at it again; this time at Las Vegas, New Mexico. As our readers will remember, Duket first exploited his fraudulent cure for tuberculosis in Findlay, Ohio. Failing there, he attempted to establish a similar business in Colorado, and doubtless would have done so had not the Board of Medical Examiners of that state protected the public against him. Then Duket came to Illinois, obtained a license and interested Bennett Medical College, and through it, William Lorimer, ex-senator and ex-banker.

THE JOURNAL investigated and exposed Duket's fraud in the early months of 1913. After spending thousands of dollars of Mr. Lorimer's money, Bennett Medical College admitted, months later, that scientific investigation of Duket's cure demonstrated its worthlessness. These findings apparently were never given the wide publicity that had been given the Duket cure itself. On April 25, 1914, THE JOURNAL gave its readers the findings of the Bennett Medical College investigators.

The Las Vegas papers for Sept. 30, 1914, contained a news-item to the effect that an open meeting of the citizens was going to be held that evening to consider a proposition made by Dr. Peter P. Duket to the Board of Directors of the Commercial Club of Las Vegas. To quote:

"According to the statement made by the doctor to the directors, he expects to erect a two-hundred-room sanitarium here in which he will treat patients with a specific cure for tuberculosis which he has discovered."

Duket was not at all modest in his requests on Las Vegas, for, according to published reports, he suggested that he be given one of the most valuable pieces of real estate in the city and that the improvements on the lot be deeded to him with the land.

The special meeting called to consider the matter was held. Duket was present and gave the audience a glowing description of the advantage to Las Vegas of having a sanatorium operated by him for the purpose of giving his marvelous cure. After Duket had said his little piece one of the Las Vegas physicians asked to be heard. He stated that he had lived in Las Vegas all his life and appreciated the advantages of that city as a suitable place for the erection of a sanatorium and that he was more than willing to do all in his power to aid the founding of any worthy institution of this sort. He suggested, however, that a sanatorium was more than merely a well-equipped building in a favorable climate. Its success and the good it might do the community must depend largely on the controlling spirit behind it. At this point, the doctor proceeded to read the record of Duket and his "cure" from the various issues of THE JOURNAL of the American Medical Association. After this, a layman told the meeting that he was one of Duket's alleged cures. He went on to say that the Duket treatment had done him no good and he told the audience of seven or eight patients whom he knew Duket had treated without benefit, three of them in fact being dead. Following these verbal bomb-shells, the chairman did not even take the trouble to put a motion that had been made, and Dr. Duket and his "cure" were given no further consideration. The Las Vegas papers state that following his failure to sell Las Vegas a "gold brick," he left for Silver City, N. M., at which place "he will endeavor to interest the people in the sanatorium proposition."

Duket is quoted as having said when he first reached the city: "The Las Vegas climate is ideal for the treatment of tuberculosis." It is; but the Las Vegas climate is evidently an unhealthy one for "consumption cure" fakers.

GLYCO-THYMOLINE

Report of the Council on Pharmacy and Chemistry

The Council, having voted that Glyco-Thymoline be refused recognition, authorized publication of the following report.

W. A. PUCKNER, Secretary.

Glyco-Thymoline is a typical example of a "patent medicine" advertised to the public through the doctors. Bottles of the mixture with the name blown in the glass are issued to physicians for distribution to patients, and the circular which comes around the bottle more or less directly recommends it for use in almost every form of infectious disease.

COMPOSITION AND VARYING FORMULAS

Different formulas for Glyco-Thymoline have appeared. At one time it was said to contain:

"Sodium 24, Boric Acid 4, Benzoin 4, Acid Salicylic 0.33, Eucalyptol 0.33, Thymoline 0.17, Betula Lenta 0.08, Menthol 0.08, Pini Pumilionis 0.17, Glycerin and solvents, q.s."

Another formula, which appeared about the same time, was:

"Benzo-Salicyl. Sod. 33.33, Eucalyptol 0.33, Thymol 0.17, Salicylate of Methyl from Betula Lenta 0.16, Pini Pumilionis 0.17, Glycerin and solvents q.s."

A later formula was like the second except that it included "Menthol, 0.08."

Analysis in the chemical laboratory of the American Medical Association showed that Glyco-Thymoline contained borax but no boric acid; sodium salicylate but no salicylic acid; sodium benzoate, but no benzoin; the compound benzo-salicyl. sod. could not be determined, but a mixture of sodium benzoate and sodium salicylate was demonstrable.[1] Later Puckner pointed out[2] that while such a combination as benzo-salicylate of sodium is known, it could not possibly be present in Glyco-Thymoline because the alkalinity of this mixture would decompose the compound. As the manufacturers evidently recognize that false formulas can no longer be made plausible, only vague statements as to the composition are now offered.

Two points should be noted in this connection:

1. Glyco-Thymoline conflicts with Rule 1 of the Council on Pharmacy and Chemistry, which declares that no article shall be accepted for inclusion with New and Nonofficial Remedies unless its composition be furnished.

2. No matter which published formula be accepted as correct, it is at best a weak antiseptic. The antiseptic ingredients present cannot act as germicides in the strength in which they are used, or in the alkaline solution on the unique virtues of which the circular lays so much stress ("the one antiseptic solution based on the alkalinity and saline strength of normal blood"). As shown by Verhoeff and Ellis,[3] undiluted Glyco-Thymoline does not kill *Staphylococcus aureus* in four hours. It evidently, they say, "could have but little if any greater therapeutic value than sterile salt solution."

DANGEROUS RECOMMENDATIONS

In Diphtheria: "Case-reports" in the advertising pamphlet describe the treatment of diphtheria with Glyco-Thymoline. It is surely unnecessary to point out that, whatever the possible merits of Glyco-Thymoline or its ingredients, they are utterly irrelevant here. But let a "case-report" be quoted:

"....., M.D., states: 'I have many an interesting story of Glyco-Thymoline. I just finished up a family in which I was treating five cases of diphtheria—two of which presented diphtheritic membrane in nasal cavity. I decided not to use antitoxin in these cases. I used only the regular constitutional treatment and Glyco-Thymoline as a local antiseptic. I believe the Glyco-Thymoline

1. The Formula for Glyco-Thymoline, Pharmacology Department, THE JOURNAL A. M. A., Jan. 9, 1909, p. 147.
2. Puckner, W. A.: Rep. Chem. Lab., A. M. A., 1910, iii, 7.
3. Verhoeff, F. H., and Ellis, Edward Keith: The Bactericidal Values of Some Widely Advertised Antiseptics, THE JOURNAL A. M. A., June 29, 1907, p. 2175.

worked wonders. My cases are all now in good health, with no after troubles. I think it an ideal antiseptic for every trouble in nose and throat.'"

Words of denunciation fall flat before the complacent self-revelation of the physician who "decided not to use antitoxin." Surely if any other physicians have been misguided by this example, there must be many another "interesting story of Glyco-Thymoline" to tell—not to speak of other families that have been "finished up."

In Ophthalmia Neonatorum: We gain from the same advertising pamphlet the following information on prophylaxis:

"The treatment in the past has consisted of instillation of silver nitrate, boric acid, salts of mercury, nucleinated salts of silver and mercury, etc. . . ., but these agents have proved to be failures as an absolute specific. . . . During the past few months experiments have demonstrated the efficacy of a new mode of treatment that is both rapid and thorough, and devoid of danger in its use. This method consists of thorough irrigation of the eyes in fully developed cases of the disease with a solution of Glyco-Thymoline."

At the very best, Glyco-Thymoline is a weak, a very weak antiseptic—not a germicide. To assert, or even to imply, that it is superior to the well-tried and efficacious Credé method of treatment for ophthalmia in the new-born is cruelly wicked.

In Consumption: This from the same pamphlet:

"The indifference of phthisical patients toward the maintenance of sanitary conditions is proverbial.

"That the environment of all such patients should be absolutely aseptic both for the good of the patient and for the welfare of those who are brought into contact with them is a well-established fact."

It is, instead, an ill-established fiction. To talk about maintaining an "absolutely aseptic" environment under any practical conditions of daily life is to talk nonsense; the thing is impossible, even were it desirable. But, not to be distracted from the main issue by subsidiary falsehoods:

"In Glyco-Thymoline we have an antiseptic which, while mild and soothing . . . is still a powerful agent for promoting asepsis, and a potent factor in the maintenance of sanitary environment in the sick room.

"Inhaled from a vaporizer or a fine spray atomizer, it will loosen the mucus in a marvelous manner and in a wonderfully short time, shorten the paroxysms of coughing to a marked degree, at the same time reducing the danger of contagion to a mirimum."

And this is the preparation, it will be remembered—this "powerful agent for promoting asepsis"—which, when applied in undiluted strength, was unable to kill *Staphylococcus aureus* in four hours!

It would be a waste of space to cite further evidence to show that the advertising of Glyco-Thymoline is in conflict with Rule 6 of the Council, which provides that no article shall be accepted "concerning which the manufacturer or his agents make unwarranted, exaggerated or misleading statements as to the therapeutic value." It is further in conflict with Rule 4, against indirect advertising by means of the label, package or circular accompanying the package.

CLAIMS TO ORIGINALITY

Hatcher and Wilbert have pointed out that from a therapeutic point of view the composition of Glyco-Thymoline is based on the formula of the widely known "compound solution of sodium borate," or Dobell's solution. For the phenol in the original, a mixture of antiseptic acids and volatile oils has been substituted.

SUMMARY

Glyco-Thymoline is in conflict with Rules 1 and 4 of the Council on Pharmacy and Chemistry, because of its indefinite composition and the method of advertising it to the public. It is in conflict with Rules 10, 6 and 8, in that it is an unscientific, shot-gun mixture sold under unwarranted therapeutic claims and under a misleading name. Altogether it must be considered an unscientific heterogeneous mixture, in which a few valuable ingredients are hidden by the useless shrubbery which surrounds them.

WINE OF CARDUI

Still Soliciting Testimonials

To the Editor:—I wish to commend your work in exposing "patent medicine" frauds, and I am particularly interested in the "Wine of Cardui" suit. A few days since a winsome young woman from Chattanooga came through this section soliciting the profession for testimonials showing the merits of Wine of Cardui. Such "nerve" is hard to imagine. I am sorry to say — to the shame of the profession — that some of the unsuspecting who had not read THE JOURNAL yielded to her winsome wiles and permitted the use of their names in this connection. Later I learned that the young woman is a lawyer and that such testimonials are to be introduced as evidence in the suit of Wine of Cardui versus the A. M. A. and THE JOURNAL.

I am giving you this information with the hope that you will issue a warning to all Fellows to be on the *qui vive* for such persons.

JOS. L. MCSPARRAN, M.D., Graham, Va.

How Tennessee Views It

Under the title "Not to Fight Them is to Help Them," the *Journal of the Tennessee State Medical Association* in its September, 1914, issue says:

"The patent medicine 'industry' has long prospered in Tennessee. Chattanooga, Paris, Winchester, Nashville and to a lesser degree, other cities and towns in the state have become more or less 'famous' on account of their 'wines,' 'tonics,' 'liniments,' 'dropsy cures' and other monstrous fakes. There are not quite as many 'medicine factories' now as once were in the state, but there are considerably more than are going to be after a while. The 'bell has rung on' the fakes and the fakers and they are going to have to move some of these fine days. The contributions of 'wine' profits to churches, 'tonic' profits to high schools, and 'soft drink' profits to church universities will not save them.

"It seems, though, that before the final fall comes that some who should know better are going to allow themselves to be soiled by patent medicine influence. We were astounded to hear one of the prominent physicians of a Tennessee city express himself as being entirely out of sympathy with the effort of THE JOURNAL of the A. M. A. to expose the fraudulent claims and reprehensible methods of patent medicine manufacturers. Worse than that, we are reliably informed that there are doctors in Tennessee who are unwilling to go on record as endorsing a resolution which uncompromisingly condemns 'wines' and 'tonics.' We can understand the method of reasoning by which some newspapers and 'boards of trade' arrive at the conclusion that it will not do for them to antagonize the patent medicine 'industry'; but we are completely at a loss to discover by what path of cerebration a modern physician can travel and at its end find himself unwilling to condemn—without reserve—an open-faced fake of the patent medicine variety. Men who are worthy to have M.D.—to say nothing of other combinations of distinguishing symbols which some have, or fain would have—after their names, are constitutionally opposed to misrepresentation and fraud. These are the stock in trade of the 'wine' makers, the 'tonic' mixers and the 'dropsy cure' bottlers. Not to condemn these fakes is but to uphold them. God forbid that any member of the Tennessee State Medical Association should compromise with them! God hasten the day when the whole people shall know the truth about the patent medicine frauds, so that their end shall come! And may all who stand with them, fall with them!"

Transformation of an Automobile into an Ambulance.—The *Wiener klinische Wochenschrift* takes the following from *Caducée*, xiv, 64: "At the Swiss Red Cross exercises, a 24 h.p. automobile with four seats was used as an ambulance. The two rear seats were removed and a bridge put in their place in a short time on which, with the aid of six poles and a few ropes, an inclined plane for the admission of three stretchers was set. Two poles were turned lengthwise, two crosswise and two to fasten the frame."

Correspondence

Antityphoid Inoculation

To the Editor:—The statistics given by Major Russell as to the reduction of typhoid fever in the army by the use of antityphoid inoculations in three doses at ten-day intervals have given an impetus to this vaccine work, so that thousands of persons are being inoculated throughout this country. He reports three cases occurring in ninety thousand inoculated soldiers during last year.

In a small community here in southern Kentucky, in which we have had approximately one thousand inoculations, we have had five of them develop typhoid fever within the next eighteen months.

There have been no reports in the current medical journals of such cases and I feel that these failures should be published from every source, in order that the true status of the procedure may be ascertained.

The cases are:

Case 1.—Miss Lillian H., a pupil nurse in Jennie Stuart Memorial Hospital, inoculated in December, 1912, by Dr. Keith, developed typical typhoid fever in July, 1914, and is still in the hospital with it. The fever is of a rather severe type running to 103.6. Vaccine used—Lederle.

Case 2.—Ray M., white, boy, aged 15, inoculated by Dr. F. P. Thomas in three ten-day intervals, August, 1912, developed typhoid fever in May, 1914, a fever of marked severity, with a relapse after his recovery. Is now rapidly gaining health. Vaccine used—National.

Case 3.—Ben W., white, man, aged 23, inoculated June, 1913, by Dr. F. P. Thomas with three ten-day interval doses, developed typhoid fever in July, 1914, and was intensely ill for three weeks with marked stupor and delirium, and three considerable hemorrhages. He has now recovered. Vaccine used—Parke Davis & Co.

Case 4.—L., white, schoolboy, student at Bethel College at Russellville, Ky., received three injections of typhoid vaccine from Dr. Austin Bell in September, 1913. He developed typhoid fever at his home near Howell, Ky., in July, 1914, in less than twelve months. Vaccine used—Mulford.

Case 5.—Mr. L., a schoolteacher, was inoculated by Dr. W. W. Durham, with three injections, in the summer of 1913. He moved to North Carolina, and there contracted typhoid in the spring of 1914. Vaccine—not known.

These are bona-fide cases of typhoid fever, occurring in persons inoculated less than eighteen months before.

The question is whether these poor results are the fault of using inferior vaccines, or vaccines that have not been properly kept, or whether they go to show that the protection against typhoid by these vaccines is at best but a fleeting one, disappearing in a few months.

It seems to me that there should be some concerted action on the part of the medical profession to obtain a standard vaccine, and see that it is handled from the laboratory to the patient in a manner that will insure its efficacy.

The results of antityphoid vaccination in Christian County, Kentucky, I should say, have not been satisfactory, certainly nothing like those reported from the army. There must be a reason. If others are encountering failures in immunization, they should report their cases in order that accurate judgment may be formed of the value of this procedure.

J. G. Gaither, M.D., Hopkinsville, Ky.

The above letter was referred to the secretary of the State Board of Health of Kentucky, who replies:

Dr. Gaither is one of our best physicians, but his report as to antityphoid inoculations in Christian County does not accord with that of the State Board of Health. Under the direction of this board 6,739 antityphoid inoculations have been made up to July 1, last. Not one case of typhoid fever has developed in them. Many of these persons were immunized during epidemics. The vaccine used in these cases has been kept in a refrigerator in the laboratory until just before using, and I think the proper care of the vaccine has contributed largely to its success. The board furnishes the vaccine in three ampules at 21 cents. In the present state of rural sanitation in Kentucky, the State Board of Health feels that antityphoid inoculation should be especially recommended in every individual between the ages of 15 to 30 years at intervals of two years.

A. T. McCormack, Secretary,
Bowling Green, Ky.

Beans for Prevention of Pellagra

To the Editor:—Since the publication of my report to the Surgeon-General on the "Cause and Prevention of Pellagra" (*Public Health Reports*, Sept. 11, 1914) and of the editorial on "The Etiology of Pellagra" in The Journal, Sept. 26, 1914, I am repeatedly called on to answer substantially the following question: "Our people cannot afford fresh meat, milk and eggs, the year round; how can we, therefore, keep pellagra from recurring?" Tentatively, at least, the answer may be summed up in one word, "beans." The people of the South, especially the poor, must be taught to cook and eat at least as much of the dried (not canned) beans and peas during the winter as they do of the fresh during the summer.

For obvious reasons, I would ask you to give this the necessary space in The Journal.

Joseph Goldberger, M.D., Washington, D. C.
Surgeon, U. S. P. H. S.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

BONES IN ANCIENT BURYING GROUNDS

To the Editor:—In Fielding's "Tom Jones" there is a description of a small riot in a country grave-yard in which skulls were used as missiles and long bones as clubs. While of course this is a work of fiction, I would like to inquire if ancient burying grounds actually have relics of this kind strewn about, and if so why? A. B. C.

Answer.—Before the Christian era burial places were usually extramural. After the advent of Christianity the dead were buried in churches or churchyards, which, in populous cities and districts, soon became overcrowded. Vaults under the pavements of the churches were crowded with coffins and, in the churchyards, coffins were placed one above the other in the graves, almost to the level of the ground. To make room for fresh interments, it is said, sextons would sometimes slyly remove bones and other remains or transfer the contents of entire graves to adjacent pits, the grave-diggers appropriating the coffin plates, handles and nails, which were sold as waste metal. In this way the air and water-supply of churchyards and their vicinities became a source of infection, very dangerous to health, leading, in England, to the Burial Acts of 1855 and later, which closed the churchyards and created the modern suburban cemeteries of wide extent. It is of record that the first to call attention to these matters in reports of Parliamentary committees was Sir Edwin Chadwick in 1843. With these facts in mind, it is easy to see how skulls and bones might have been tossed on the surface of the ground and left there by grave-diggers, as in the "Alas, poor Yorick" scene in Hamlet. The overcrowded condition of the Christian cemeteries was in striking contrast with the cleanly Graeco-Roman process of cremation, and the vast cypress-planted cemeteries of Constantinople which are said to occupy a wider territory than that covered by the habitations of the living. The ossuaries of the Latin peoples, in which temporary graves are rented to the poor for a period, after which all the bones of their dead are hustled pell-mell into a huge open ditch or stone receptaculum, found their most striking example in the catacombs. The *fosses communes* of Paris in which as many as forty to fifty dead bodies were buried at a time seem a variant of the latter idea, which is quite common to the Spanish possessions in both hemispheres. A photograph of such an ossuary from San Juan, Porto Rico, is on exhibition in the Army Medical Museum.

In Swinburne's tragedy of "Bothwell" (Act II, Scene 2), which follows the Scotch historic documents very closely, there is a scene describing Queen Mary's escape with Darnley through the vaults of the ruined abbey of Holyrood:

"See you, my friends, what valiant hearts are here,
My lord's and mine, who hardly have crept forth,
In God's fear only, through the charnel house,
Among the bones and skulls of ancient kings,
That thought not shame to stand for stumbling stones
In their poor daughter's way, [etc.]

ARTICLES ON BRILL'S DISEASE

To the Editor:—Please give references to articles on Brill's disease appearing since 1910. D. K. BRIGGS, M.D., Blackville, S. C.

ANSWER.—

Typhus Fever, General News, THE JOURNAL, May 2, 1914, p. 1413.
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POISONING FROM SUPPOSED "WILD SWEET POTATO"

To the Editor:—Have you any knowledge, or experience with *Jatropha macrorhiza* [*septemfida*], a small plant growing in southern Arizona, belonging to the milk spurge family, Euphorbiaceae? I have recently seen sixteen cases of poisoning among Arizona militiamen from eating the root of this plant, and I am in search of information concerning the plant, its alkaloids, if known, cases of poisoning reported, etc. In this instance the root was mistaken for "Wild Mexican Sweet Potato."

C. E. YOUNT, Prescott, Ariz.

ANSWER.—The family, Euphorbiaceae, contains a very large number of poisonous plants. In some cases the toxic principles are fixed oils, in others toxalbumins and in others still, cyanogenetic glucosids. Some species such as the castor-oil and the croton-oil plants contain both toxalbumins and poisonous fixed oils. Many species of spurge contain substances which are extremely irritant to the human skin and mucous membranes. In general, all parts of the euphorbiaceous plants are poisonous, although the constituents of the seeds, roots and rhizomes have receive most attention. Apparently the presence of an alkaloid has been reported in but one species of euphorbia and this alkaloid is not claimed to be poisonous. No chemical examination of *Jatropha macrorhiza septemfida* appears to have been reported, although it is stated to possess cathartic properties and to have been used in medicine to some extent for its purging effects. The rhizomes of a related species, *J. angustidens*, growing in Mexico, contains a glucosid which produces hydrocyanic acid on hydrolysis. Another related species is *J. curcas*, the purging nut of Barbadoes. This contains a fixed oil having chemical and therapeutic properties similar to croton oil but less active. Many cases of poisoning have been reported from eating the seeds of this plant.

PRICE OF "HANDBOOK OF THERAPY"— KEEPING QUALITY OF BLAUD'S PILLS

To the Editor:—1. What is the price of the A. M. A. "Handbook of Therapy"?

2. A firm of manufacturing chemists makes the statement that pills or tablets containing Blaud's mass soon change from ferrous carbonate to ferric oxid, thus reducing greatly their therapeutic activity. Is this a fact? GEORGE S. GILPIN, M.D., Stoutsville, Mo.

ANSWER.—1. $1.50.

2. In general there seems to be no reason why a Blaud pill made in accordance with the direction of the U. S. Pharmacopeia and coated with gelatin or sugar should not keep for a long time; specimens have been known to keep at least forty years. A comparison made by the American Medical Association Chemical Laboratory between a specimen of Blaud pill purchased in the open market and a pill containing ferrous carbonate which the manufacturer claimed to be greatly superior in permanence to the ordinary Blaud pill, showed both to be in relatively good condition, thus suggesting that the ordinary market supply may compare favorably with products for which most extravagant claims are made.

WIRE TO REPLACE PLATINUM WIRE FOR BACTERIOLOGIC PURPOSES

To the Editor:—A medical friend recently referred to a note relating to the use of some alloy wire to take the place of platinum wire in the laboratory as used in inoculations for bacteriologic work. We are writing to inquire whether THE JOURNAL can give us the information.

V. H. BASSETT, M.D., Savannah, Ga.

ANSWER.—The wire sometimes used for this purpose is a material with a high fusing point, patented and sold under the name of "Meteor" wire. It can be obtained through surgical instrument houses; in Chicago of V. Mueller & Co.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, November 10-11. Sec., Dr. W. S. Stewart, 404 Citizens Bank Bldg., Pine Bluff. Homeopathic, Little Rock, November 12. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock. Eclectic, Little Rock, November 10-11. Sec., Dr. C. E. Laws, Ft. Smith.

CONNECTICUT: New Haven, November 10-11. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, New Haven, November 10. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DISTRICT OF COLUMBIA: Washington, October 13-15. Sec., Dr. George C. Ober, 125 B St., S. E., Washington.

GEORGIA: Atlanta, October 13-15. Sec., Dr. C. T. Nolan, Marietta.

KANSAS: Topeka, October 13-15. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

MAINE: Portland, November 10-11. Sec. Dr. Frank W. Searle, 776 Congress St., Portland.

MICHIGAN: Lansing, October 13-15. Sec., Dr. Beverley D. Harison, 504 Washington Arcade, Detroit.

MISSISSIPPI: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

NEBRASKA: Lincoln, November 11-12. Sec., Dr. H. B. Cummins, Seward.

NEVADA: Carson City, November 2. Sec., Dr. S. L. Lee, Carson City.

NEW JERSEY: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

NEW MEXICO: Santa Fe, October 12. Sec., Dr. W. E. Kaser, East Las Vegas.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Waco, November 10-12. Sec., Dr. W. L. Crosthwait, Amicable Bldg., Waco.

WEST VIRGINIA: Clarksburg, October 13. Sec., Dr. S. L. Jepson 81 Twelfth St., Wheeling.

Book Notices

THE CLARION. By Samuel Hopkins Adams. Cloth. Price, $1.35. Pp. 417. Boston: Houghton, Mifflin Co., 1914.

The *Clarion* is a newspaper purchased by Hal Surtaine, the only son of a millionaire "patent-medicine" manufacturer, "Dr." Surtaine. It was bought when the young man was angry because the editor would not publish a retraction of charges that had appeared a few days previously against his father and his father's business. "Dr." L. Andrè Surtaine, the opulent maker of "Certina," had in his earlier days been Andy Certain, a peripatetic quack and nostrum vender.

The son, Hal, is a college-bred man, of more than ordinary ability and of high ideals. He starts out to run his new property with honesty of purpose and without fear or favor. The problems he has to meet and the difficulties he encounters make up the story—and a stirring and strenuous story it is. The book is a wonderfully graphic pen picture of the forces that control journalism, of the unholy alliance between journalism and "business," and of the paralyzing grip of the advertiser on a free press. ". . . . If the newspaper fakes its news, if it distorts facts or if it suppresses them, it is playing false with its subscribers. It is sanding its sugar and selling shoddy for all wool." This was the attitude the young owner of the *Clarion* took toward his property. But it took him some time to see that the advertising pages, no less than the news pages, carry with them a responsibility to the public. This fact, already at work on his subconsciousness, took new life when an advertisement of a "blue-sky" mining proposition, offered by an old friend of his father's, was refused. The mining shark was indignant, and pointed to some other advertising being carried in the current issue of the *Clarion*. To quote from the protests of the gentleman who wanted to advertise his Streaky Mountain mining stock:

"Why, Streaky Mountain Copy is the Holy Bible compared to what you've got here. Take a slant at this: 'Consumption Cured in Three Months.' 'Cancer Cured or Your Money Back.' Catarrh dopes, headache cures, germ killers, baby-soothers, nerve-builders—the whole stinkin' lot. Don't I know 'em! Either sugar pills that couldn't cure a belly-ache, or hell's-brew of morphin and booze. Certina ain't the worst of 'em, any more than it's the best. I may squeeze a few dollars out of easy boobs, but you, Andy Certain, you and your young whelp here, you're playin' the poor suckers for their lives. And then you're too lily-fingered to touch a mining proposition because there's a gamble in it."

The young newspaper proprietor also got an insight into his father's business when, by accident, he was thrown in contact with his father's confidential adviser, a man who had collected testimonials for the nostrum manufacturer and who knew all that was to be known about the black details of the "patent-medicine" business. This interesting personage was in a volubly alcoholic state when the young man innocently demanded information regarding the number of bottles of his father's nostrum—"Certina"—it would take to effect a "cure." The reply he got was an eye-opener:

"A real cure couldn't make office-rent," declared the expert with conviction. "What you want in the proprietary game is a jollier. Certina's that. The booze does it. You ought to see the farmers in a no-license district lick it up. Three or four bottles will give a guy a pretty strong hunch for it. And after the sixth bottle it's all velvet to us, except the nine cents for manufacture and delivery."

Not the least interesting part of the book deals with the attempt of the commercial interests of the town in which the *Clarion* is published to handle a serious epidemic. The disease breaks out in a part of the town occupied by old ramshackle buildings and crowded with the poorest of the poor. The authorities, at the behest of the business interests of the town, try to cover up the epidemic so that "trade" shall not be injured—and with the inevitable result.

While it is all fiction, it is fiction founded on fact, and Mr. Adams is, probably, the only writer who could deal with the subject with an actual knowledge obtained by personal experience. For ten years he was a reporter and special writer on one of the leading New York newspapers, and a member of the staff of *McClure's Magazine* when that periodical was doing its best work. But the greatest thing he ever did was the Great American Fraud articles in *Collier's*, attacking vested interests, which required that the author know his facts and have courage to present them. The former he obtained by a personal investigation that covered many months. He visited "patent-medicine" factories, got in touch with the "patent-medicine" promoters and with their dupes; then he presented the data gained in language that was direct and that could not be misunderstood. In preparing the articles that appeared in book form under the title "The Health Master," he made a thorough study of public-health matters; consequently what is touched on in "The Clarion" regarding public health—as, for instance, concerning the epidemic—may be expected to be "true to life"; and the expectations will be realized on reading the book. But while "The Clarion" carries a message, it is also, and primarily, a novel—a story of love and self-sacrifice of compelling power. It is a book that grips one from the start, and it should prove to be one of the "best sellers" of the year. It is a book that will appeal to physicians especially.

A TEXT-BOOK OF PHYSIOLOGY FOR MEDICAL STUDENTS AND PHYSICIANS. By William H. Howell, Ph.D., M.D., Sc.D., M.P., Professor of Physiology in the Johns Hopkins University. Fifth Edition. Cloth. Price, $4 net. Pp. 1020, with 306 illustrations. Philadelphia: W. B. Saunders Co., 1913.

This embodies all the good features of the earlier editions together with valuable additions of those recent contributions in physiologic research which are a distinct and lasting advance in our knowledge of physiology. The work of Tashiro on the metabolism of nerve fibers; of Cannon, Washburn and Carlson on the mechanism of hunger, and of Harvey and Bensley on the probable origin of the free acid in the gastric secretion have received the recognition which they deserve. The chapter on the "History of Protein Food" has been rewritten. Denis' and Folin's contributions have been added to this chapter and the question of the protein minimum discussed from the point of view of the nutritive value of different proteins in growth and maintenance. There are three reasons why this book can be highly recommended: Unlike many text-books of physiology it is up to date and is kept so by the author. In addition, the book contains the most important bibliography pertaining to the subject under discussion. Finally, it is written with a clarity of expression which makes the reading of the book a pleasure.

SURGERY OF THE VASCULAR SYSTEM. By Bertram M. Bernheim, A.B., M.D., Instructor in Surgery, the Johns Hopkins University. Cloth. Price, $3. Pp. 104, with 53 illustrations. Philadelphia: J. B. Lippincott Company, 1913.

This little volume may be divided into two parts, the first dealing with the technic of operations on the blood-vessel and the second dealing with the clinical side of the subject. The technic of the operations has been materially simplified in the past two or three years, by eliminating everything except the essentials, and these have been made as simple as possible. The technic is clearly described and well illustrated by excellent drawings. The second part is limited practically to statistics of operations on aneurysms, the statistics being condensed from the work of Monod and Vanvert. To one unfamiliar with the technic of operations on blood-vessels the work will be very valuable.

TASCHENBUCH DER AUGENHEILKUNDE FÜR AERZTE UND STUDIERENDE. Von Dr. Curt Adam, Direktor der Kaiserin Friedrich-Hauses für das Aerztliche Fortbildungswesen. Third Edition. Cloth. Price, $2. Pp. 395, with 80 illustrations. New York: Rebman Company, 1914.

An interesting chapter of this compend is the one devoted to prescriptions for all eye conditions. It comprises 185 different formulas and completely covers the ground of ophthalmic therapeutics. Of rather timely importance is the section devoted to the requirements for entrance into the German and Austrian armies. While the book is but another addition to the rather large list of condensed treatises on the eye, it is, on the whole, a very creditable pocket work on ophthalmology, being complete in a concise and concentrated form.

Miscellany

Providing Occupation for Tuberculous Patients

In the *California State Journal of Medicine* for August, Philip King Brown describes the work of Arequipa Sanatorium, a place where tuberculous working girls can be cared for at a cost within their means, but with no element of charity. The death-rate from tuberculosis among the 40,000 working girls of San Francisco is said to be twice as high as among men. Since it was found that women had far less opportunity to recover from tuberculosis than men, most healthful outdoor occupations being closed to them, and since it had been found unsatisfactory to mix the sexes, it was decided to limit the work to women. The intention is to receive only early cases. Such patients are charged $1 a day; and this rate has so far covered the running expenses of the institution. Patients obliged to remain continuously in bed are charged $1.50 a day; but the aim is to avoid receiving such patients. It has been found that third-stage cases in the working classes rarely attain complete recovery; that is, the patients seldom become active factors in the industrial world again. The sanatorium is intended primarily for patients who, after being helped toward recovery and taught how to live, may go back to work without danger of relapse. Patients in the third stage, therefore, are received only when they have shown decided gains and are ready to attempt work.

Many occupations otherwise suitable for convalescents are ruled out in connection with tuberculous patients because the product cannot be sterilized without risk of being ruined. The form of craft chosen here is pottery. No patient is obliged to go to the pottery, and no one is allowed to go who is coughing or who within a week has had a temperature as high as 99 F. When the girls wish to work in the pottery they are allowed to begin on one hour a day at something that requires little effort. The working hours are gradually increased to two or three a day. No one works more than five hours a day, and no work is done Saturday or Sunday. Frequently no gain has been made until the patient began to work; and no girl has had to give up work because of any ill effects. The girls teach each other, so that supervision of the work is reduced to a minimum. In some instances considerable artistic ability has been revealed.

The girls are not paid until their work acquires some actual value, which may not be until a week after beginning. Very few patients have been able to earn their entire support at the sanatorium, but some girls have earned as much as $15 a week for the twenty-five hours of work accomplished before their departure, and as high as $1.15 for a few hours has been earned within a few weeks of beginning the work. The pottery has at times more than cleared expenses; it is hoped, by increasing sales through advertising, to wipe out a present deficit which is being met by friends.

It has been evident from experience that at least one-third of the patients must be helped financially to remain under care as long as it is needed. Employers, the Associated Charities of San Francisco, fraternal and social organizations and private individuals have aided, so that no girl has been compelled to leave for lack of means. It is felt, however, that it will be impossible to meet expenses for the future unless the work is confined to girls so little handicapped by the disease that they can go to work in the pottery soon after arrival, or unless a number of endowed beds are furnished. Brown feels that the most profitable field for extended efforts is educational work along health lines among San Francisco working girls.

Color Test for Serodiagnosis of Syphilis

Landau's technic is simple and seems to be proving quite reliable. All that is needed is a 1 per cent. solution of iodin in methanetetrachlorid, a clear fluid of constant chemical composition. To 0.2 c.c. of the serum is added 0.01 c.c. of the iodin reagent; they are well mixed and then set aside for four hours at room temperature. The fluid is then a clear, transparent yellow if the serum came from a syphilitic; with normal serum the fluid looks a whitish gray and is opaque. Landau at first used iodized petrolatum for the test, 0.025 c.c. iodin in 50 c.c. of white petrolatum. To 0.2 c.c. of the serum was added 2.5 c.c. of this reagent and the test-tube set aside in a dark place for from five to fifteen hours. Syphilitic serum decolors the mixture while the color persists a reddish yellow with normal serum. With this technic he obtained positive reactions more constantly than with the Wassermann test in ninety syphilitics and thirty-two normal controls as he reported in his first communication in the *Wien. klin. Wchnschr.*, 1913, xxvi, 1702. With the methanetetrachlorid the findings are proving even more reliable.

Methods of Artificial Respiration

The recommendations of the Committee on Resuscitation from Mine Gases, whose report is published by the federal Bureau of Mines as Technical Paper 77, with regard to methods of artificial respiration, are the following:

"In all cases of suspended or inadequate respiration, as in very slow breathing, the method of artificial respiration which can be most quickly applied should be used at once. In most cases, where good air is present, manual methods of artificial respiration are most immediately useful. Of those the modified prone-pressure method . . . is best. If there is on the victim a local wound that the prone-pressure method may seriously increase, the Silvester method, in which other parts of the body are moved, may be substituted.

"In cases of carbon-monoxid poisoning, oxygen should be given instead of air. If the victim is breathing at approximately the normal rate, oxygen may be given very simply by fastening to the face of the victim a mask supplied with straps to hold it in place, fitted with an outlet valve opening to the air, and also fitted with a tube having an inlet valve and connected with a breathing-bag. Such masks are on the market. The breathing-bag is kept provided with oxygen from a cylinder. If the victim is breathing slowly or irregularly, or has ceased breathing, he should be given the oxygen, in the absence of other means, by a manual method of artificial respiration, preferably the prone-pressure method.

"Of mechanical devices for artificial respiration, the committee has examined the pulmotor and the Dr. Brat apparatus, and disapproves of them, because repeated suction of air from the lungs is not physiologic, and if continued is likely to result in injury to the lungs and inadequate inflation; and disapproves of the pulmotor also because the automatic mechanism is so readily disturbed as to be a frail dependence at critical moments.

"The committee recommends the apparatus devised by Dr. Meltzer because of its certain action, its freedom from sucking in expiration and its lightness, cheapness and simplicity. And the committee suggests that in cases of suspended or insufficient breathing the modified prone-pressure method be supplemented as soon as possible by the use of this apparatus."

Surgery and Malaria

A. Lara N reports in the August *Revista medica de Yucatan* an instructive case in which a man died a few hours after an operation for chronic appendicitis. He had been in the hospital for several days and was given tonics, as he seemed rather debilitated and had developed grippal bronchitis. After this had subsided, the appendix was removed under chloroform and ether, preceded by a little morphin and atropin. The temperature ran up during the simple operation and was 108 F. as the last suture was taken, and the patient collapsed and died in half an hour. The high temperature had evidently induced fatal congestion in the brain, and examination of the blood revealed the crescent parasites of pernicious malaria in the stage of sexual evolution. The unsuspected latent pernicious malaria had evidently been aroused by the anesthetic, and a paroxysm developed coinciding with the operation, the attack of pernicious malaria in the comatous form proving speedily fatal.

Medicolegal

Practicing "Suggestive Therapeutics" Without a Certificate —Constitutionality of Statute

(State vs. Pratt (Wash.), 141 Pac. R. 318)

The Supreme Court of Washington affirms a conviction of the defendant of practicing a mode of treating the sick, known as suggestive therapeutics, without having a certificate from the state medical board. The court says that suggestive therapeutics, as practiced by the defendant, consists of a laying on of hands on that part of the body where the trouble is, and, quoting from his testimony, "on certain parts of the spine that control this—these nerves, or the nerves that control the organ; and I give certain suggestions which go from my mind to the mind of the patient, and the mind of the patient controls his own body. That is the way the cure is performed." The claim was also made that by this laying on of hands, certain "vibrations" were sent through the body and were instrumental in effecting the cure. That the mind exercises a powerful and ofttimes controlling influence on the body cannot be denied, and the court is offering no criticism on the defendant's methods. It is concerned only with the fact that it is a mode of treating the sick, and as such can be practiced only after obtaining the proper certificate from the state medical board. No doubt suggests itself to the court but that the facts were sufficient to sustain the conviction.

The defendant's brief was devoted to an argument seeking to establish the unconstitutionality of the law under which the complaint was made and conviction had. It attacked especially the provision included in the words, "or any other system or mode of treating the sick or afflicted," where the law reads: "Any person who shall practice or attempt to practice, or hold himself out as practicing medicine and surgery, osteopathy, or any other system or mode of treating the sick or afflicted in this state, without having, at the time of so doing, a valid, unrevoked certificate as provided in this chapter, shall be guilty of a misdemeanor. . . ." The argument was that such provision denies to those persons engaged in the practice of any system or mode of treatment not embraced within the terms "medicine," "surgery," and "osteopathy," as mentioned therein, the equal protection of the law, in establishing an arbitrary classification and denying to those not within such classification the right to engage in a lawful occupation. The court found the argument of counsel in support of his contention interesting, and read it with much care. It was the same argument, however, made by the defendant in State vs. Greiner, 63 Wash., 46, 114 Pac., 897, in contending that one who followed the method of treatment of the sick known as chiropractic was not within the prohibition of the law, and the method itself not subject to legislative control. The court there said that none of the objections then raised was well founded. On the same reasoning, it expresses the same opinion as to the objections raised by this defendant.

It was also suggested that the section above quoted must be construed with that one which reads: "Nor shall this chapter be construed to discriminate against any particular school of medicine or surgery or osteopathy or any system or mode of treating the sick or afflicted, or to interfere in any way with the practice of religion: Provided, that nothing herein shall be held to apply or to regulate any kind of treatment by prayer." Suggestive therapeutics, however, as shown by the record before the court, is not the practice of any religious belief, nor is it "any kind of treatment by prayer."

Power of School Boards to Require Physical Records of Pupils by Physicians

(Streich vs. Board of Education of Independent School District of City of Aberdeen et al. (S. D.), 147 N. W. R. 779)

The Supreme Court of South Dakota affirms a judgment in favor of the respondents in this case, in which the sole question presented was their right to require of the children seeking admission into the schools under their charge, and as a condition to their admission, the furnishing of a prescribed physical report either by some regularly licensed physician of their own selection and at their own expense, or by a physician furnished by the board at the expense of the school district. The physical-record cards provided for the purpose required information as to history of contagious diseases, heart, lungs, throat, tonsils, skin diseases, spine, teeth needing attention, abscesses in mouth, irregular teeth, recommendations, results.

The court says that many cases were cited in which it has been held that it is beyond the power of a school board to require pupils to be vaccinated as a condition precedent to attending schools, but such decisions had no application to the question here. It is one thing to say that requiring a report from which the board may learn the physical condition of a child is a reasonable exercise of police power, and quite another thing to say that a rule prescribing a certain method of medical treatment is a reasonable exercise of the police power; and yet this court has held that, under certain conditions, the requiring that pupils be vaccinated is a reasonable exercise of the police power. By so holding, this court recognized that to the school board there is delegated the right to exercise such police power as is reasonably necessary in carrying out the duties imposed on it.

Was the information sought such as would tend to promote the welfare of the child himself in his school-work, as well as to promote the well-being of the school as a whole? Can it be successfully contended that because the statute has intrusted to some particular board the general supervision of matters pertaining to the health of the people, that by implication they have forbidden school boards from bringing about such results as were stipulated to have followed the adoption of the regulation in this case, when it can be done by requiring reports such as the one before the court? The information sought would necessarily tend to aid in giving to the children the greatest benefit possible in pursuing the additional courses in physical culture, athletic exercises and vocal culture provided for them, though the court does not wish to intimate at this time its views with regard to the power of the board to require pupils to pursue studies not prescribed by statute, because that question was not at issue. Nor does the court give weight to the contention that the examination called for might result in such mental suggestion of diseases as might result in mental disease germs. Neither did the case present any religious question.

Was the source from which the information was required a proper one from which to seek same? It is evident that this information, to be entitled to due consideration, should come from some one having expert knowledge of the matters referred to; it could not be furnished by the parent or the teacher. It is true that much of it could be as well furnished by a competent dentist, but there was some which he could not furnish, and it all could be furnished by a competent physician. Moreover, such an examination as called for could not subject a child to anything not in perfect harmony with the conventions of to-day, could not subject it to indignity, and would be reasonable.

Tracings and Photographic Evidence Admissible to Show Physical Condition

(M., K. & T. Ry. Co. of Texas vs. Heacker (Tex.), 168 S. W. R. 26)

The Court of Civil Appeals of Texas says that in this personal injury a tracing of plaintiff Heacker's pulse was admitted in evidence, it being conceded by all the physicians examined on the subject at the trial that the instrument by which the tracing was made was accurate and that the tracing indicated a very weak heart. There was also admitted in evidence, in illustration or demonstration of the condition of the eyes, a tracing made by the perimeter. Again, a microscopic photograph of the plaintiff's urine was admitted in evidence, the photograph having been scientifically and correctly taken and disclosing tube casts or crystals in the urine, indicating an inflamed and serious condition of the kidneys. The court holds that there was no error in the admission of any of this evidence.

Society Proceedings

COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Association of Railway Surgeons, Chicago, Oct. 14-16.
Delaware State Medical Society, Wilmington, Oct. 13-14.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Nevada State Medical Association, Reno, Oct. 13-15.
Southern Medical Association, Richmond, Nov. 9-11.
Virginia Medical Society, Washington, D. C., Oct. 27-30.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Twenty-Seventh Annual Meeting, Held at Buffalo, Sept. 15-17, 1914

The President, DR. CHARLES N. SMITH, Toledo, Ohio in the Chair

Officers

The following officers were elected for the ensuing year: president, Dr. Charles L. Bonifield, Cincinnati; vice-presidents, Dr. Asa B. Davis, New York, and Dr. K. I. Sanes, Pittsburgh; secretary, Dr. E. Gustav Zinke, Cincinnati; treasurer, Dr. Herman E. Hayd, Buffalo.

Pittsburgh was selected as the next place of meeting.

Necessity of Constantly Looking for Cancer of Uterus

DR. J. CARSTENS, Detroit: Every case in which curetting is done should be examined. In every case of trachelorrhaphy, the tissue removed should be examined for cancer. The age of the patient does not matter.

DISCUSSION

DR. JULIUS H. JACOBSON, Toledo, Ohio: If we can impress nurses in the training schools with the importance of the early recognition of cancer, we can do more good in informing women of its early signs than by any other plan we may adopt.

DR. CHANNING W. BARRETT, Chicago: I would not be inclined to lay as little stress as the essayist does on irritation as an etiologic factor in the causation of cancer. We shall probably find out some time that there is another cause, a parasitic cause.

DR. GORDON K. DICKINSON, Jersey City: Dr. Deaver and I stand alone in exploiting the value of diagnostic hysterotomy. Dr. Carstens speaks of the pathologist finding cancer cells and making a diagnosis. How many times have we trusted our pathologists who send a report back "No cancer," and afterward we discover carcinoma? We should make a diagnosis early, and I do not see any reason why when clinical and pathologic proof is wanting, we should not bring the fundus down into the vagina, split it, examine the interior of the uterus, and remove a piece, if necessary, instead of relying on the curettings.

DR. CHARLES L. BONIFIELD, Cincinnati: I do not think it is wise to keep on harping to the laity about the early symptoms of cancer, because they cannot make the diagnosis, but what is necessary is to teach married women who have had children the necessity of going to a gynecologist occasionally to be examined, just as they go to a dentist to see if their teeth are sound or decayed. If it is worth while to pay money to save teeth, it is certainly worth while to have some competent man determine whether or not a woman is suffering from cancer.

DR. J. H. CARSTENS, Detroit: Irritation does not produce cancer. It never has and never will. If by coincidence there is a place that is irritated and cancer develops, there is some other place where cancer develops where irritation does not exist. Persons who wear glasses irritate the skin of their noses; their noses are pinched, yet I challenge anybody to show me a single case of cancer having started there from such irritation.

Renal Damage from Calculi

DR. HENRY D. FURNISS, New York: Undoubtedly the calculus in each case is present much longer than the symptoms, yet the average duration of symptoms in my forty cases was four years,—the minimum being one month and the longest eighteen years. Frequently complete destruction of a kidney occurs with very little discomfort or interference with the general health. Multiplicity of stones was found in fifteen cases, though in only two were both sides affected. I regard the so-called reflex pain as very rare. Stones unless multiple or very large, situated in the calices, in the absence of infection, or the opening of a blood vessel by attrition, cause little discomfort and *little damage*. The size and location in these quiescent cases should be determined by frequent roentgenograms, and when the stone remains favorably situated and does not enlarge, a waiting policy should be the one used. When very large, pressure atrophy of the renal parenchyma occurs. When a stone enters the pelvis of the kidney, then obstruction is liable to occur, and with the consequent retention, infection will sooner or later develop. The rougher the stone and the greater the retention, the greater the liability of infection, so the more urgent need of operation.

Ureteral calculi that are small, smooth, do not completely obstruct, move downward constantly and are passed in a relatively short time, do only temporary damage. Those that are fixed, or obstruct seriously the outflow of urine, soon lead to irreparable damage, especially if infection takes place. Stones in the pelvis that ball-valve it, and ureteral calculi, as a rule, cause much more suffering and greater renal damage, than stones located in the calices, especially when on the retention, infection supervenes. Ureteral calculi often become embedded in the ureteral wall, and after operation, stricture of the ureter is very apt to occur, and cause further damage of the kidney. The effect of calculi on the kidney is dependent mostly on the obstruction that is produced, and is added to by infection, which was present in 68 per cent. of my cases. There were nine cases of pyelitis and pyelonephrosis, five of pyonephrosis, and five of infected hydronephrosis. In seventeen cases the function of the involved kidney as compared with its fellow was determined, and in only two was it normal; in four the loss of function was moderate, in three great, and in eight complete. This analysis shows that in practically 50 per cent. there was damage to the renal function, and that in 35 per cent. it was completely destroyed. These numbers fall short of showing the real condition, for in fifteen cases, nearly 50 per cent. of the total, no determination of function was made. Of the thirty-two cases, the calculi produced no injury in thirteen, in nine there was pyelitis and pyelonephritis, in five pyonephrosis, and five infected hydronephrosis. In the pyonephrosis cases and the infected hydronephrosis with great loss of function, nephrectomy is advisable.

In the ureteral cases with great loss of function, it is debatable whether the removal of the stone, or the kidney, is advisable. My own opinion is that better results are obtained by removing the kidney than the stone, and that the best results come from removing the kidney and ureter to a point below the stone.

DISCUSSION

DR. CHARLES L. BONIFIELD, Cincinnati: I remember distinctly a case in which I operated two years ago. The patient went to one of my colleagues two or three years previously, and had the kidney explored and needled; but the conclusion was reached that there was no calculus. In the meantime the Roentgen ray showed a calculus. It was easily removed. It is important to employ roentgenoscopy in all these cases early.

DR. FRANCIS REDER, St. Louis: In one case I cut down on a kidney following a roentgenogram which located the stone in the lower pole. At the operation it was found that the stone was an inch and a half in the ureter. In some way the kidney was displaced and the shadow showed through the kidney and gave the impression that the stone was located in the lower pole of the kidney.

DR. E. GUSTAVE ZINKE, Cincinnati: A man, aged 54, did not pass so much urine as usual, and occasionally he had a dull pain in his back. Examination of the urine revealed a slight trace of pus. The roentgenogram showed a stone about the size of a rooster's head on the right side, with a stone about the size of a cherry on the left side, which gave him little or no trouble. At operation on the kidney with a large stone, the kidney was easily found, exposed, and incised its full length to remove the stone. There was apparently no evidence of destruction of the kidney tissue, and as the man had a stone on the other side I concluded not to remove the kidney. I sewed it up and fixed it in the usual way. The man did well for one week, and then suddenly began to get worse. He died of exhaustion at the end of two weeks.

DR. JOHN F. ERDMANN, New York: In one case the roentgenogram showed a large stone on the right side and a large shadow on the left side. The patient had a high temperature with all the evidences of sepsis. I removed a large hypernephroma from the left side but did not operate on the kidney containing the stone. Notwithstanding the man's urine was badly infected he has recovered. I hope later, if the man turns up, to do a nephrostomy and remove the stone from the right kidney.

Anastomosis of the Gall-Bladder to the Stomach: "Cholecystogastrostomy"

DR. JULIUS H. JACOBSON, Toledo, Ohio: The operation of cystogastrostomy has the same indication as that for cholecystenterostomy. The presence of bile in the stomach after cystogastrostomy does not interfere with digestion or cause the patient any inconvenience. The operation is very easy to perform; therefore, it offers a palliation and prolongation of life in a class of cases which as a rule are considered inoperable. On account of the small danger of ascending infection it should be the choice of methods when it is necessary to anastomose the gall-bladder to the alimentary tract.

Torsion of Ovarian Cysts

DR. K. I. SANES, Pittsburgh: Recognizing the dangers of torsion, we should adopt only one line of treatment, and that is ovariotomy. Pregnancy should not be considered a contra-indication to the operation. In a case of torsion of ovarian cysts and one with torsion of the right tube and ovary during the fourth month of pregnancy the patients went to full term and were delivered of living children about five months after the operation. In cases of impaction of a twisted cyst in the pelvis, the vaginal route may be preferable. The good result of the vaginal ovariotomy in one of my cases shows that in favorable instances it can safely be used. There was no death in my ten cases.

DISCUSSION

DR. CHANNING W. BARRETT, Chicago: The question as to how to deal with an ovarian cyst and yet save the ovary is an important one. In a series of cases collected, the frequency of abortion following operation is almost in direct proportion to the trauma done beforehand. The further question that was brought out in this series was what to do with an ovarian cyst that was double, there being a rather common notion that if both ovaries are removed abortion will take place. Abortion did not occur in the series of double removal of the ovaries, but seldom in a single removal and that is easily accounted for by the extra manipulation of taking out the two ovarian tumors rather than one.

DR. ALBERT GOLDSPOHN, Chicago: If we inspect the outer part of the cyst wall near its pedicle, frequently we will see macroscopic evidences of graafian follicles, and I have repeatedly dissected out that outer layer, carefully ligated vessels, without compromising the main pedicle, and folded the flap up and stitched it, and menstruation has continued.

DR. HUGO O. PANTZER, Indianapolis: I have had fourteen cases of torsion of ovarian cysts in fourteen consecutive months, and then none in two years plus.

Delayed Union in Non-Infected Epigastric Wounds

DR. MILES F. PORTER, Fort Wayne, Ind.: The evidence on which rests the opinion that delayed union is more liable to occur in wounds in or near the midline above the umbilicus than in similar wounds below the umbilicus is quite strong. Neither the suture material nor the method of suturing can be blamed in all cases. The causes are many. Of special importance is the general condition of the patient. By using non-absorbable suture material, and allowing the sutures to remain *in situ* for two weeks or more, one may avoid serious accidents from delayed union; but one cannot in this way always secure prompt union. Incisions through the recti muscle unite more promptly than incisions through the white line. The results of delayed or imperfect union are immediate and remote. The immediate result is protrusion or exposure of the viscera, and the remote result is hernia and rarely rupture of the scar. Lack of union is usually symptomless and is usually discovered when the wound is dressed. In some cases the moisture of the dressing leads to an example which reveals the condition. As a rule, the prognosis is good. The proper closure of wounds may not secure prompt union, but will prevent serious accidents from delayed union.

DISCUSSION

DR. GEORGE VAN AMBER BROWN, Detroit: I have had three cases similar to those described by Dr. Porter. The first occurred about ten years ago in a young woman from whom I had removed a large cystic ovary and did the so-called Gilliam operation. She left the hospital in fifteen days. Two or three days after her return home I was called and found that the wound had separated down to the peritoneum. There was no suppuration. It was filled with one blood-clot. A culture was made and staphylococcus infection was found. The patient was taken to the hospital and the peritoneum was closed with catgut and a layer of gauze placed between the peritoneum and the muscle for drainage and the muscle sheath closed with catgut, and then she made an uneventful recovery.

DR. LEWIS F. SMEAD, Toledo, Ohio: I have had two cases of delayed union above the umbilicus. The first was a case of pyloric obstruction due to ulcer in which the Finney pyloroplasty was done. It was a right rectal incision. The wound was closed with fine silk in the peritoneum, the muscle and fascia with heavy silk, and running silk in the fascia; the through-and-through muscle and fascia stitches going back ¾ inch and tied over a running stitch, the skin being closed by subcutaneous silver wire. At the end of ten days the silver wire was removed and the wound was apparently clean. In the afternoon the wound opened completely from end to end. It was closed immediately, but the woman died on the seventeenth day from peritonitis.

DR. ASA B. DAVIS, New York: We have seen five or six cases of separation of the wound after cesarean section in the Lying-In Hospital. The wound was not infected apparently, but by closing it again with through-and-through silkworm-gut sutures, there was strong union and no complications. In one or two cases the wound had been infected and opened part way down and had been allowed to heal by granulation. In these cases hernia developed, while in the other cases it did not. It is a rare thing to see in connection with cesarean operations.

DR. HUGO O. PANTZER, Indianapolis: I operated on a patient in the relatively well period of pernicious anemia. Within three days after operation there was not found a vestige of any absorbent suture material, and I used chromic gut of the heavy type through the fascia.

DR. FRANK D. GRAY, Jersey City: The only instance of separation of the abdominal wound which I can remember in the course of five years or more was a laparotomy done for resection of the intestine following a bullet wound, making six or seven openings in the intestine, which I resected and united by the modified Maunsell method, and the man made an uninterrupted recovery. For a week there were no evidences of sepsis. At the end of that time he sat up, was put in a roller chair, and on his own responsibility went rolling around the ward. He went back to bed, had partial syncope and vomited. The wound separated. It was closed again, and he made an uneventful recovery with perfect union.

DR. WILLIAM H. HUMISTON, Cleveland: I do not see why we should have more difficulty with incisions made in the epigastric region than in those made below the umbilicus. The question arises whether the technic might not be at fault in the majority of cases. It is better to go through the muscle to the right of the median line and be very careful not to strip the fascia from the muscle. If the incision is clean and the muscles are separated carefully, and the posterior fascia is divided carefully, I do not see why there should be separation of the wound. In the majority of cases where separation occurs the muscle sutures are drawn too tight.

(To be continued)

AMERICAN ROENTGEN RAY SOCIETY

Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914

(Continued from page 1229)

The Treatment of Cancer by Physical Methods, with and without Surgery

DR. ARTHUR F. HOLDING, New York City: Incipient surface cancers can be cured, (a) if *superficial*, by physical methods; (b) if *deep*, by physical methods and surgery. The physical methods employed include massive Roentgen-ray doses, desiccation (Clark), fulguration (De Keating-Hart), diatherapy (Nagelschmidt) and radium. Beginning cancer of the gastro-intestinal tract can be diagnosed with accuracy by recently improved roentgen-ray methods. Advanced cancer either internal or external cannot be cured. The successes herein reported are due, not to the discovery of any one new factor, but rather to the combined application of the best and most efficient electrophysical technic, both in early diagnosis and prompt treatment, the results of which, if permanent, are invaluable. The methods herein advocated are very costly. If this work is to be continued, sufficient money must be raised to carry it on. This means, for institutions, proper endowment; for individuals, the establishment of adequate fees.

Treatment of Chronic Roentgen Dermatitis

DR. E. W. CALDWELL, New York City: For all chronic Roentgen-ray lesions while they are strictly cutaneous, radium treatment is the most practical, because the easiest to apply, and especially because of its comparative freedom from pain. The effectiveness of the freezing methods and of the electric-spark methods cannot be questioned, but they are both painful. Sparks can sometimes be applied in situations impossible to reach with liquid air or carbon-dioxid snow. Of the two methods, freezing is somewhat less painful. The value of surgery in such cases has been demonstrated by Dr. Porter beyond any shadow of doubt, but it is my impression that these operations are dangerous and that they call for surgical judgment and technical skill of a degree which is very rare. Under the best conditions excision cannot be safely done without sacrificing some useful healthy tissue. The possibility of hastening metastasis must always be considered, and when this has occurred there is little to hope from any known treatment.

Treatment of Acute Roentgen-Ray Dermatitis

DR. W. J. DODD, Boston: Two or three years ago this paper would have been unnecessary; to-day, I am afraid it is. Powerful apparatus is being installed in many small hospitals, as well as in private laboratories. Untrained and unqualified men may be put in charge. If this be the case, sad results may follow and much harm be done. Occasionally we are going to get reactions in certain cases when Roentgen therapy is applied, and it is to this class I particularly suggest this exceedingly simple and absolutely efficacious remedy, white wash.

	gm. or c.c.		
℞ Zinci oxidi	30		ʒ i
Phenolis	2	or	ʒ ss
Glycerini	4		ʒ i
Aquae calcis	240		ʒ viii

Shake well and bathe area for five to ten minutes, twice or three times a day. Avoid all heavy dressings and, when possible, expose the lesion to the air. Do not apply this remedy on a dressing, and allow to remain for five to ten minutes, but sap it on and let the air get to the lesion. Under no conditions use an ointment.

SYMPOSIUM ON ROENTGEN THERAPY

Technic in Deep Roentgen Therapy

DR. GEORGE E. PFAHLER, Philadelphia: Since we now have outfits capable of giving almost a uniform output under definite circumstances, it is only necessary to know the value of each factor in order to reproduce at will the quality and quantity of the rays needed for any definite result. I found that the denser portions of the body, especially the liver, absorbed considerably more rays than an equal thickness of water. The liver absorbs twice as much. Only about one-fiftieth of the rays which are filtered through 3 mm. of aluminum, corresponding to 6 or 7 Benoist in penetration value, will pass through 3 inches of meat. Therefore, to obtain the equivalent of an erythema dose at 3 inches in depth, we must cross-fire at this point fifty times. We can give from 20 to 30 x on the surface, which will reduce correspondingly the number of areas through which we must treat. The absorptive value of aluminum filters does not correspond progressively with the number of millimeters used. The first millimeter absorbs nearly as much as the next two. The rays below 8 are relatively almost valueless in effect 3 inches in depth. The value of the ray at this depth is not much reduced by any number of millimeters of aluminum up to 7. The secondary radiation in an adjoining room is a very decided factor to be reckoned with in connection with photographic work, and especially in regard to personal protection.

Radium as an Aid to Roentgen Therapy

DR. RUSSELL H. BOGGS, Pittsburgh: Radium and Roentgen rays have certain differences, but each contains certain rays which are analogous. The action of radium and mesothorium is the same. I believe that the penetration method of filtration and accessibility of application rather than the agent employed determines the results. When treating with radium, authorities advise to use filters which allow lower rays to pass. The reaction produced on tissue by radium is very similar to that produced by the Roentgen ray. The endothelium of the blood-vessels is more sensitive to radium than to the Roentgen ray. A dermatitis of the same degree heals more quickly when produced by radium than by the Roentgen ray. All types of epithelioma of the skin can be treated equally well with the Roentgen ray as with radium, but when the epithelioma is situated in a cavity it is more accessible to radium. In carcinoma of the breast I believe the Roentgen ray is to be preferred. In carcinoma of the uterus, as a prophylactic measure, and in inoperable carcinoma of the rectum, I have been using mesothorium locally and the Roentgen ray by the cross-fire method externally. Results have been gratifying.

Deep Roentgen Therapy in the Treatment of Malignant Growths

DR. SAMUEL STERN, New York: By using a 3-mm. aluminum filter and a ray of high penetration, three or four erythema doses can be administered without producing even a first degree dermatitis. The amount generally administered at one sitting is about 15 to 20 x, measured under 13 mm. aluminum. This can be given once every three weeks, or under certain conditions oftener, without any danger. Certain tissues possess a wonderful tolerance for almost any amount of Roentgen rays, as, for instance, the mucous membrane of the vagina. By carefully protecting the outside area, one can give through the vagina daily treatments, lasting for one hour each time, continued indefinitely for weeks, without producing even the slightest dermatitis. The degree of penetration most advantageous in deep therapy is from 8½ to 9 Bauer. Anything below this does not possess a sufficient quality of hard rays to produce the best effects. No operable

cases of deep-seated malignant growths should be treated with the Roentgen rays except when patients refuse to be operated on. The treatment is reserved for inoperable cases, recurrences, and prophylactic treatments following operation.

Technic and Recent Results of Deep Roentgen Therapy

Dr. James T. Case, Battle Creek, Mich.: For deep therapy, I use the Coolidge tube with a minimum focus skin distance, a penetration equivalent to at least a 9-inch parallel spark gap between points, delivering the ray through 4 mm. of aluminum and a layer of sole leather, the time of exposure varying, of course, with the focus skin distance and the dosage required. The maximum dosage given any one skin area within a three-weeks' period should not exceed 18 or 20 Kienboeck units, measured by the Gauss modification of the number of skin areas, it was possible to introduce from 400 to 700 x units during each three-weeks' period, remembering, however, that no given skin area should receive more than 18 or 20 x as a maximum.

The final result in malignant cases may usually be judged by the result of the first series of treatments. Especially good results in my experience were obtained in uterine hemorrhage due to myomas and other causes. In hyperthyroidism, persistent thymus, Hodgkin's disease and leukemia, especially good results were also obtained. A few cases of malignancy have been symptomatically cured. Sufficient time has not yet elapsed for any definite statements regarding the final results. There is no question as to the good palliative results. Sarcoma has been found to be, on the whole, more responsive to the treatment than carcinoma, with the exception of periosteal sarcoma, no case of which, in my experience, has given any satisfactory results.

Massive Versus Fractional Dose in Roentgen Therapy

Dr. A. M. Cole, Indianapolis: The "massive" dose which is accurate and convenient is not suitable for the treatment of all diseases amenable to roentgenotherapy. Its greatest field is in deep therapy and for destructive action on cancer cells. The fractional dose gives better results in skin diseases calling for stimulation, and where you desire to produce atrophy of the skin appendages. Also in such conditions as leukemia and Hodgkin's disease. For safety it is the best method when the entire face is to be treated. The fractional dose may be measured by means of the H. Scale where great accuracy is essential. With either method of roentgenotherapy technic is the *sine qua non*. This is especially true with the "massive" dose to avoid the great possibilities of danger. The keeping of a record in each "massive" dose treatment is most important.

DISCUSSION

Dr. J. H. Edmonson, Birmingham, Ala.: In rodent ulcer I prefer the soft ray. It has a more lasting effect than the hard or filtered ray. Skin lesions respond better to fractional than to massive doses. I use massive doses in the average cutaneous epithelioma, but not in the spreading superficial type.

Dr. George C. Johnston, Pittsburgh: The idea to-day is to get all the rays possible as hard as possible, and filter them through three layers of aluminum. There is a great deal of error in that. The massive dose is very necessary in some conditions, such as lesions deep in the pelvis, but the majority of cases which we treat are not of that type. Only that radiation is effective which is transformed in the cells we wish to reach. The effect manifested depends entirely on the amount of energy absorbed and transformed in the tissues, not on the amount of rays that pass through them. Deep therapy is intended for deep lesions only, not for rodent ulcers or lupus, or other superficial lesions.

Dr. A. M. Crane, Kalamazoo, Mich.: To apply the same technic to various lesions without relationship to their nature or irradiation in the body or their reaction to the Roentgen ray is wrong. The Roentgen ray may cause tissue death as well as tissue growth. The subject of immunity enters into this problem. When we treat tubercular glands of the neck with the Roentgen ray, changes are brought about in the blood-stream similar to those produced by an injection of tuberculin. When we apply a sufficient dose of the Roentgen ray to a cancer we cause a disintegration of the cancer cells. They are absorbed into the body. A negative opsonic index is produced, and the patient may die. If we consider the subject of Roentgen therapy from that standpoint, we will be more careful in doing this work. We must not give more radiation than the body can react to; therefore, the single massive dose will not always do, because the tissues will not be able to react to it. Such treatment is not rational.

Dr. R. H. Stevens, Detroit: The epithelial cells of the papillae of the scalp hairs are much more sensitive to the ray than the cells of the papillae of the lanugo hairs. The cells of certain organs are much more sensitive than those of other organs. Again, the amount of the ray depreciates as it is absorbed. There are certain types of growth that respond well to the Roentgen ray and others that do not. This may be due to the character of the gamma rays. If in a case of nevus you filter the rays through a few sheets of paper, it is very satisfactory, because we get a large amount of the gamma rays. Birthmarks do not respond to the Roentgen ray, no matter whether you use a soft or a hard tube. They do respond to the ultraviolet rays and the beta rays, although some are very penetrating, as much so as the gamma rays. Moles will not respond to the Roentgen ray, but respond well to the radium ray.

Dr. H. W. Dachtler, Toledo, Ohio: My results with the massive doses in diseases of the eyelids have not been so good as from old methods. I attribute that to the fact that the scar is more contracted. In one case I had an eversion of the eyelid, which I did not see in my earlier work. So far as deep therapy is concerned, I wish we could get tubes to give harder rays. I want to get a more uniform treatment in the depths of the tissue. We must be careful in saying that only rays absorbed in the tissues do the work. I never use a softer ray than a Bauer 6 in any superficial work, and I never filter.

Dr. H. K. Pancoast, Philadelphia: In enlarged thymus leukemia and Hodgkin's disease we must be careful about giving massive doses. In some cases of Hodgkin's disease massive doses will undoubtedly cause a fatal result. In leukemia we must be still more careful, because the patient's kidneys must be considered. They may be overtaxed by the elimination of waste products. Large doses of Roentgen rays may destroy not only liver cells, but also red cells.

Advanced Roentgen Technic in the Diagnosis of Esophageal Lesions

Dr. W. H. Stewart, New York: Into the esophagus is inserted either by swallowing or artificially, a long hollow cylinder of some soft material which, after being placed in position, is filled with a bismuth solution. This bismuth-filled tube, adapting itself to the natural form of the esophagus, will give either by the fluoroscope or by the roentgenogram an accurate reproduction of the esophagus. Thin tubing of rubber, gold beater's skin, hog or sheep casing was used. Up to the present time, however, I have been most successful with the best grade of hog casing. In introducing the hog casing there must necessarily be considerable nervous strain and sense of suffocation, particularly when the bismuth solution is injected into the tubing. It is advisable to spray the pharynx with a 2 per cent. solution of cocain to prevent gagging and coughing. A section of hog casing is then selected, about 16 to 18 inches in length—it must be tested with water before using to be sure that no bad leaks are present. One end is tied firmly with some dental floss.

After lubricating the casing the first procedure is to attempt to have the patient swallow this down to or through the obstruction. In cases, however, in which the stricture is very tight and the patients themselves are unable to pass it on beyond the obstruction, we must resort to artificial means of introduction, by means of a French catheter. There are cases, however, in which the stricture is so tight that an attempt to withdraw the catheter also removes the casing. In these patients we have provided a rubber tubing, about 12 inches long, with a hollow metal tip at the lower end and

a metal junction at the upper end, to which is attached another piece of rubber tubing about 7 inches long. The lower tube is fenestrated at frequent points. This lower section is passed into a piece of hog casing, previously tested and found satisfactory, and tied firmly below to the metal tip, and above to the metal junction, after which it is again tested with water to see that no leaks are present. Into this rubber tubing is placed a metal introducer, much the same as a styletted catheter. The tubing is directed downward into the esophagus and passed a sufficient distance to make one confident that the lower metal tip lies within the stomach. Then with a quick upward motion the introducer can be safely removed. We now have the hog casing within the esophagus enclosing a rubber fenestrated tube. It is necessary now only to inject sufficient of the bismuth solution to balloon out the casing. We are usually able to tell when this has been accomplished by the symptoms of the patient, who immediately complains of a feeling of distress along the line of the sternum, with dyspnea. Gravitation has been found to be the best method in which to fill the tube. When the required quantity has passed in or the patient complains of marked dyspnea, it is well to discontinue, placing a clamp on the rubber tubing. The plate should then be made rapidly.

We have been successful in using this method in differentiating between diverticulum and carcinoma, one of the most puzzling problems to solve. The vital observation necessary in differentiation is the presence of the sacculation posterior and outside of the bismuth-filled hog casing, lying within the esophagus.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, XVI, No. 4, pp. 387-521

1 *Skull of Human Fetus of 40 mm. C. C. Macklin, Toronto, Ont.
2 Critical Period in Development of Intestines. C. R. Bardeen, Madison, Wis.
3 Earliest Blood-Vessels in Man. J. L. Bremer, Boston.
4 Retrogressive Changes in Fetal Vessels and Suspensory Ligament of Liver. A. W. Meyer, San Francisco.

1. **Skull of Human Fetus 40 M.M.**—The finding of a small nodule of cartilage above and in front of the cochlea is, so far as Macklin is aware, a contribution to his knowledge of the parts in this area. Other new features are the cartilagines para-ethmoidalis, meatus medii and paraseptalis superior; in addition may be mentioned the lateral and dorsal cranial cartilages, and the paranasal cartilage, lying lateral to the lacrimal duct.

American Journal of Medical Sciences, Philadelphia

September, CXLVIII, No. 3, pp. 313-468

5 Severe Anemia Connected with Gastro-Intestinal Diseases. A. Schmidt, Germany.
6 *Relation of Glycosuria to Pituitary Disease. Report of Case. J. M. Anders and H. L. Jameson, Philadelphia.
7 *Value of Tests for Renal Function in Early and Advanced Bright's Disease. R. Fitz, Boston.
8 *Intravenous Use of Strophanthin with Regular and Irregular Pulse Rhythms. H. G. Schleiter, Pittsburgh.
9 *Value of Colonic Inflation in Diagnosis of Chronic Appendicitis. E. H. Goodman, Philadelphia, and C. W. Lüders, Cynwyd.
10 Duodenal Alimentation. W. G. Morgan, Washington, D. C.
11 *Tuberculosis of Bronchial Lymph-Nodes and Lung Hilus; Clinical and Roentgenographic Study. H. F. Stoll and A. C. Heublein, Hartford, Conn.
12 Two Cases of Hereditary Ataxia. E. M. Williams, Sioux City, Iowa.
13 Cholesterin Antigens in Wassermann Reaction and Quantitative Testing of Syphilitic Sera. J. G. Hopkins and J. B. Zimmermann, New York.
14 An Unattached Mass Found in Abdominal Cavity of Male. R. P. Campbell and J. J. Ower, Montreal.
15 *Value of Petechiae in Diagnosis and Prognosis. H. W. Emsheimer, New York.
16 *Neutrophilic Blood-Picture in Pernicious Anemia. L. H. Briggs, San Francisco.

6. **Relation of Glycosuria and Pituitary Disease.**—In support of the fact that hyperthyroidism may be consequential to lesions of the hypophysis, Anders and Jameson report a case of acromegaly with glycosuria in which there were manifestations of exophthalmic goiter. They have also collected all cases of pituitary disease recorded in literature for a period of five years terminating December 31, 1913. This investigation yielded a total of 246 cases of hypophyseal disease. In 183 cases the urinary findings were mentioned and showed 28 instances of glycosuria, in 9 of which the condition was intermittent. Sixteen of the 28 cases of pituitary glycosuria, or 57.1 per cent., showed acromegaly, while 10, or 35.7 per cent., failed to show the latter condition in association. In 2 cases the presence of acromegaly was in doubt, hence excluded. Of the 183 cases of pituitary disease in which the urinary findings were given, 88, or 42.6 per cent., showed acromegaly, and of the latter only 16, or 18.2 per cent., showed the presence of sugar. In 91 cases of pituitary disease in which acromegaly was absent, 10 showed spontaneous glycosuria, and no mention was made of either hypo- or hyperthyroidism in these cases. There was tumor in 72 cases (of which 3 were specified as sarcoma, 2 cyst, 1 adenocarcinoma, 1 epithelioma, 1 adenoma, and 4 as "tumor"), tuberculosis in 3, gumma in 2, hypertrophy in 1, fracture at base of skull with extravasated blood in 1, and lesion not stated in 8. The ages in the series were given in 21 cases, out of the total of 28, and found to average thirty-seven and one-quarter years, the period of life intervening between 26 and 60 years furnishing all save 3 cases.

In view of the fact that glycosuria not uncommonly complicates exophthalmic goiter, the question naturally arises whether in a case such as reported by the authors it is to be attributed to the associated hyperthyroidism or to the hypophyseal disease. Covering five years which ended January 1, 1914, there was but 1 case of hyperthyroidism in combination with pituitary lesions and glycosuria out of a total of 28 cases recorded, namely, their own case herein reported, so that the rôle played by the thyroid gland in the causation of glycosuria in these cases would appear to be both trivial and obscure.

The authors advance two hypotheses pertaining to the combined conditions discussed which have received considerable corroborative support from their statistical figures: (1) that the relationship existing between hyperthyroidism and pituitary glycosuria, with or without acromegaly, is a remote one, and (2) that pituitary glycosuria without acromegaly not uncommonly occurs (in 10 of the series, as against 16 in which acromegaly was also associated), contrary to the opinions of certain writers.

7. **Tests for Renal Function in Bright's Disease.**—Tests for renal function in Bright's disease are regarded by Fitz of importance for diagnosis, prognosis and treatment. The lactose, salt, water, potassium iodid, and nitrogen tests are of special value in the early diagnosis of nephritis. In advanced nephritis the functional condition is so complex that tests to estimate total function are more useful than those designed to study the function of different parts of the kidney. The phthalein excretion is the most satisfactory single test. The non-protein nitrogen of the blood offers additional information in regard to faulty eliminative powers on the part of the kidney. Yet cases occur in which both blood-nitrogen and phthalein are normal, and chlorid retention is an important factor in the disease. Finally, acidosis has been shown to exist in uremia. Since no one test is perfect in determining total renal function, cases must be studied from several points of view. A rational dietetic treatment can be given in individual cases based on the conditions disclosed by the study of the kidney's selective excretory capacity.

8. **Intravenous Use of Strophanthin.**—The action of strophanthin administered intravenously is similar to that of other members of the digitalis group administered orally, but far more rapid. Strophanthin had, in cases treated by Schleiter, a decisive effect in all cases with pulsus irregularis perpetuus. In cases in which the pulse rhythm was regular, it showed an effect in only three instances out of ten

and this was both slight and transitory, except for the case of paroxysmal tachycardia. In desperate cases of the pulsus irregularis perpetuus type, strophanthin administered intravenously will tide the patient over until digitalis orally administered has time to take effect. In cases of the pulsus irregularis perpetuus type, the first effects are noted in twenty to thirty minutes, though the maximum may not be apparent for seven or eight hours. Thus effect lasts from three to ten days. It does not seem advisable to give on any one occasion more than 1/60 of a gr. and this, if repeated, should not be done before forty-eight hours; 1/120 of a gr. has given a maximum result. On the other hand it may sometimes take more than 1/60 of a gr. to produce this. Two cases of paroxysmal tachycardia are reported with strophanthin administration, both followed by cessation of the attacks. It is not clear, however, to what extent the strophanthin was responsible for this phenomenon.

9. **Colonic Inflation in Appendicitis.**—Inflation of the colon, the authors state, should be regarded merely as an aid in the diagnosis, history and physical examination being far more valuable. The authors have seen no positive reactions in normal individuals. The test is in no sense pathognomonic of chronic appendicitis.

11. **Tuberculosis of Bronchial Lymph-Nodes and Lung Hilus.**—Stoll and Heublein claim that prior to the fifteenth year, tuberculosis of the bronchial glands and lung hilus is the most common form of tuberculous disease. The early symptoms are usually indefinite and chiefly of toxic origin. While a cough is generally present, it may be entirely absent even with advanced disease of the bronchial glands. Although the orthodox signs of incipient (apical) tuberculosis are not present in these cases—in fact, the primary lesion is often in the lower lobe—there are certain physical signs which are indicative of a pathologic process at the lung root. The significant signs are a "hilus dimple" (noted anteriorly over the hilus region at the end of inspiration), dilated veins, parasternal and paravertebral dulness, and most significant of all, a well-marked whispered bronchophony in the interscapular region (d'Espine's sign). Roentgenography, and especially stereoroentgenography, is of the utmost value in these cases, as it shows the exact location and extent of the morbid process, and is the greatest stimulus to careful clinical work.

15. **Value of Petechiae in Diagnosis and Prognosis.**—Ten cases are cited by Emsheimer in which petechiae were present. I. History of erysipelas, followed in two weeks by high fever and prostration; petechiae in conjunctiva; diagnosis of streptococcemia made; bacillus typhosus in blood-culture. II. Acute onset with fever, vomiting and convulsions, in a child; signs of meningitis; skin petechia; no meningococci in spinal fluid; recovery; acute polio-encephalitis. III. Acute labor pneumonia; jaundice; pneumococcic sepsis; petechia. IV. Emaciation; marked anemia; conjunctival petechia; admitting diagnosis; pernicious anemia; blood-count typical of lymphatic leukemia. V. Signs of purpura hemorrhagica; steady progression of symptoms; ulcerations and gangrene; fatal outcome. VI. Case of myocarditis and nephritis; bacillus coli communis pyelitis; petechia in conjunctiva; sudden death. VII. History of a debauch; conjunctivitis; numerous petechiae in upper and lower conjunctivae. VIII. History suggestive of an acute exacerbation of a chronic nephritis; marked eosinophilia; conjunctival petechiae; trichiniasis. IX. History of bite by rabid dog; increasing irritability, finally coma and death; skin petechia. X. History and signs of acute appendicitis; chills and fever; petechiae in conjunctivae; weak heart sounds; diagnosis of bacterial endocarditis with mesenteric embolus; acute gangrenous appendicitis found at operation.

16. **Neutrophilic Blood-Picture in Anemia.**—In the course of some work on the Arneth blood-picture in various conditions, the multiplicity of lobes of the neutrophils in a case of pernicious anemia was observed by Briggs. This particular point has since been studied in nine consecutive cases seen during the past year and in the stained smears from three others. In ten out of twelve cases a decided increase in the normal number of lobes of the nuclei of the neutrophils was found, that is, a "shift to the right" in the terms of Arneth. In eight cases of correspondingly severe anemia, not of the idiopathic pernicious variety, seven showed either a normal number, or a decrease in the number of lobes, a "shift to the left."

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

September, II, No. 3, pp. 155-222

17 Ants and Bees as Carriers of Pathogenic Micro-Organisms. W. M. Wheeler, Boston.
18 Morphology, Life Cycle and Relation to Disease of Entamoeba Histolytica. C. F. Craig, Fort Leavenworth, Kan.
19 Behavior of Hansen Bacillus in Vitro. C. W. Duval, New Orleans.
20 Diphtheroid Organisms Isolated from Lymphadenomatous Structures of Body. J. A. Lanford, New Orleans.
21 An Epidemic of Malaria at Greenwich, Conn. F. C. Hyde, Greenwich, Conn.
22 Report of an Unusual Amebic Infection of Genito-Urinary Tract. W. J. Lynn, New Orleans.
23 Case of Bilateral Ainhum. H. B. Gessner, New Orleans.

Boston Medical and Surgical Journal

September 24, CLXXI, No. 13, pp. 473-508

24 Improved Nursing for Mentally Ill. W. Channing, Brookline.
25 Training of Psychopathic Nurse. M. A. Nutting, New York.
26 Comparison of Drugs Used in General and Mental Hospitals. D. Gregg, Boston.
27 Modern Developments in Mental Nursing. C. W. Eliot, Cambridge.
28 Analysis of Recoveries at Psychopathic Hospital, Boston: I, One Hundred Cases, 1912-1913, Considered Especially from Standpoint of Nursing. E. E. Southard, Boston.
29 Impressions of General Hospital Nurse Beginning Work in Psychopathic Hospital. M. L. Gerrin, Boston.
30 Pellagra and Its Symptoms; Importance of Mouth and Gastro-Intestinal Lesions. J. B. MacDonald, Hathorne.
31 Hysterectomy and Hemorrhage: Three Different Indications. H. B. Perry and E. E. Thomas, Northampton.

Bulletin of Johns Hopkins Hospital, Baltimore

September, XXV, No. 283, pp. 255-286

32 Relations of Internal Medicine to Psychiatry. L. F. Barker, Baltimore.
33 *Korsakow's Psychosis Occurring During Pregnancy. D. K. Henderson, Baltimore.
34 *Bacteria Found in Milk Heated to Various Temperatures. W. W. Ford, Baltimore, and J. C. Pryor, Washington.
35 Presence of Spore-Bearing Bacteria in Washington Market Milk. J. C. Pryor, Washington.
36 *Action of Potassium and Sodium Iodids and of Iodin Ion on the Heart and Blood-Vessels. D. I. Macht, Baltimore.

33. **Korsakow's Psychosis Occurring During Pregnancy.**—Henderson reports 2 cases. The first case may be summarized as follows: A multipara, aged 31 years, in the first month of her second pregnancy started to suffer from nausea and vomiting, and rapidly lost in weight. She then complained of numbness and weakness in the feet, legs and hands. She became depressed, started to fabricate, lost trace of time, and was getting worse so rapidly that an abortion was performed when the patient was three months pregnant. A delirium with fear reaction ensued, she lost power in her hands completely, had incontinence of urine and feces, aphonia, paralysis of the diaphragm, and, probably, also at this time tachycardia. On admission to the hospital the patient was delirious and showed the characteristic symptoms of a generalized polyneuritis. In addition, she had a double adductor paralysis of the vocal cords, and involvement of both the phrenic and vagus nerves. During her hospital residence the striking points in her mental condition have been the exceedingly poor power of retention, the tendency to confabulate, and the unstable emotional condition. Both mentally and physically a wonderful improvement has resulted.

The second case differs from the first in that the psychosis was not accompanied by any polyneuritic symptoms.

The points on which Henderson especially lays stress are: The pregnant state must in certain cases be recognized as an important etiologic factor in the production of peripheral neuritis, and of that condition known as Korsakow's syndrome. The neuritis caused may be either (1) local, that is, affecting one nerve or one limb, or (2) diffuse, that is, affecting all the limbs and certain of the cranial nerves. The mental disorder characteristic of the condition is usually associated with a generalized polyneuritis, but, as evidenced by one case reported here, it may occur alone. The frequent

history of hyperemesis gravidarum in association with the generalized forms of the disorder is so striking that it suggests a possible line of approach as to the elucidation of the nature of the toxin. Those patients who in previous pregnancies have suffered from severe vomiting, or other serious toxic phenomena, should be strongly urged to avoid any further pregnancies.

34. **Bacteria Found in Milk Heated to Various Temperatures.**—Ford and Pryor agree with Flügge that milk always contains the heat-resistant spores of aerobic and anaerobic bacteria, which, by their development, can give rise to disagreeable and unwholesome changes in milk, converting it from a food of great nutritive value into an undesirable if not a dangerous article of diet. These changes take place in milk heated to any temperature from 65 C. to 100 C. and kept at any temperature from 22 C. to 37 C., but not at that of the ice-box, 4 to 6 C. The spores of the bacteria causing these changes survive in milk for long periods of time on ice and can initiate the same changes in milk kept on ice when transferred to higher temperatures. There is a danger zone in the heating of milk which may be described as ranging from about 65 C. to 85 C. in which milk will never clot normally. Below this temperature heated milk may clot normally. Above this temperature milk will either clot or slowly peptonize. The problems of pasteurization of milk must be worked out on the basis of the changes which occur in milk heated to 60 to 65 C. and the result may depend on the original character of the milk, on local bacterial infections of milk, on the character of the stables in which the milk is first obtained, on the methods of preservation or on unknown factors. Further investigation alone can determine these points.

With present knowledge as to the difficulty of getting milk free from pathogenic organisms the safest milk is that which has been boiled for a time varying from ten minutes to half an hour and then preserved on ice. In such milk the organisms giving rise to explosive and putrefactive changes are destroyed, while the organisms which remain usually coagulate the milk or coagulate it and then peptonize it. Rarely they peptonize it without coagulation. While these bacteria may give rise to severe derangements of metabolism in children, and even to disease, as Flügge maintains, this has not yet been clearly shown clinically. Danger from them may probably be almost entirely eliminated by keeping the milk on ice from the time of boiling till the time of use. Milk heated to any temperature from 60 C. to 100 C. must be kept on ice, since heated milk is far more apt to decompose than raw milk.

36. **Action of Potassium and Iodin Ion on Heart and Blood-Vessels.**—Experiments showed Macht that the potassium ion produces a relaxation of the blood-vessels and a marked depression of the heart; that the sodium ion has a slightly stimulating action on the blood-vessels and also stimulates the heart, and that the iodin ion is a powerful stimulant to both the heart and blood-vessels as shown by its action in experiments on isolated organs. The stimulating effect of the iodin ions, however, is greatly inhibited in the intact animal by their chemical combination with the proteins of the blood. Whether the chemical compound thus produced is a stable one, or whether it is a loose one, and slowly breaks up, setting iodin free, remains an open question. If iodin is set free, a stimulating effect is to be expected.

The action of sodium and potassium iodids on the heart and vessels can be best understood from the action of their component factors. Sodium iodid possesses no depressing property, for the sodium ion is a vascular constrictor and a cardiac stimulant, and the iodin ion, in so far as it is free to act, has the same action. Potassium iodid, on the other hand, clearly shows the depressing effect of the potassium ion on the heart and vessels, especially of mammals, not only on isolated organs, but also in the living animals. It is, therefore, not a matter of indifference which of the iodids is to be chosen for the purpose of depressing the circulation, as, for instance, in case of an aneurysm. The above pharmacologic analysis of the action of the iodids, furthermore, shows that so far as experimental evidence goes, the iodids possess no special virtue of lowering blood-presure but that effect is really due entirely to the potasium, and could be produced even more efficiently by other potassium salts.

Florida Medical Association Journal, Jacksonville

September, I, No. 3, pp. 65-96

37 Diagnostic Value of Abdominal Pain in Surgical Diseases of Upper Abdomen. J. E. Boyd, Jacksonville.
38 Case of Secondary Multiple Echinococcus Cysts of Peritoneum, Complicating Acute Appendicitis. J. S. Helms, Tampa.
39 Malignant Tumors of Jaws. R. C. Turck, Jacksonville.
40 Six Cases of Pellagra in One Family. J. L. Kirby-Smith, Jacksonville.
41 Two Recoveries from Epilepsy. W. P. Spratling and D. C. Main, Welaka.

Georgia Medical Association Journal, Augusta

September, IV, No. 5, pp. 137-165

42 Some Cardinal Symptoms in Diagnosis of Appendicitis. A. G. Little, Valdosta.
43 *Suprapubic Prostatectomy. W. L. Champion, Atlanta.
44 Diagnosis of Disease of Accessory Sinuses of Nose. J. T. Maxwell, Savannah.
45 *Oil-Ether Colonic Anesthesia. J. C. Pate, Valdosta.
46 High Forceps and Cesarean Section. A. Smith, Atlanta.
47 Cleaning Up of Typhoid in Blackshear. W. P. Williams, Blackshear.

43 and 45. Abstracted in THE JOURNAL, May 2, pp. 1428 and 1429.

Illinois Medical Journal, Chicago

September, XXVI, No. 3, pp. 153-220

48 Roentgenology of Chronic Joint Disease. J. T. Case, Battle Creek, Mich.
49 Etiology and Pathogenesis of Rheumatoid Arthritis. D. J. Davis, Chicago.
50 *Medical Management of Chronic Arthritis. F. Billings, Chicago.
51 Rôle of Pylorus in Etiology and Treatment of Gastric Ulcer. J. C. Friedman and W. W. Hamburger, Chicago.
52 Modern Gastroscopy with Demonstration of Sussmann Gastroscope. A. A. Goldsmith, Chicago.
53 Arteriovenous Anastomosis in Upper Extremities for Impending Gangrene. D. W. Neal, Springfield.
54 Psychoneuroses and Their Treatment. F. P. Norbury, Springfield.
55 Present Status of Treatment of Pulmonary Tuberculosis. J. W. Pettit, Ottawa.
56 Two Hundred Cases of Gonorrheal Urethritis without Complication. I. S. Koll, Chicago.
57 Hobbies. H. C. Blankmeyer, Springfield.
58 Illinois School for Blind with Its Record of Causes of Blindness. A. L. Adams, Jacksonville.
59 Experience with Intravenous Injections of Neosalvarsan. E. Sargent, Moline.

50. **Medical Management of Chronic Arthritis.**—The main problem, Billings says, is to get rid of the systemic infection and finally to overcome its sequence—the deformities. Primary rest is necessary as long as motion causes pain. In varying time, four to six weeks, passive motion with gentle massage may be begun. The amount of passive exercise must be gauged by the effect on the individual. The patient, always more or less nervous, tires easily. To these patients tire is painful. Day by day the exercise must be increased. The rest, restorative measures (food, etc.), should improve the general nutrition and blood circulation. The passive exercise will gradually improve the local blood circulation and oxygen supply to the infected tissues. In due time active exercise is added. This must be systematically and regularly performed. Usually a nurse or masseuse should teach the patient the lighter forms of calisthenics. These measures, namely: rest, restorative food, pure air, environment of optimism, graduated passive and later active exercises will overcome the debility, malnutrition and poor general circulation. They will also help to restore the local circulation and oxygen supply to the infected tissues. By these measures the natural defenses of the body are improved, the infected tissues become richer in oxygen and consequently a poor culture medium for the invading micro-organisms. Finally the destructive progressive metabolic changes of the tissues cease. Gradually one may note favorable changes in the joints. Atrophied, contracted muscles increase in bulk and functionate. But one dare not relax the control of the patient. Daily systematic passive and active exercises increased gradually must be continued until a relative restoration occurs. Otherwise a relapse is apt to occur because of neglect of one or more of the above important factors relating to nutrition, general and local blood supply, etc.

Autogenous vaccines made up of the dominating strains of streptococci obtained from the tissues and exudates of the focus of infection have been used by Billings. The dose used has been from 100,000,000 to 1,000,000,000. The large dose does not seem to be any more effective than the small one. The use of autogenous vaccines apears to increase the defenses of the body as judged by a study of the opsonins and phagocytic index. It is Billings' opinion that the general measures of management and treatment are absolutely necessary to succeed in helping these patients. To this management may be added autogenous vaccination without fear of harmful results. The use of stock vaccines seems rational. The use of vaccines in the treatment of chronic deforming arthritis without attempting to find or remove the dominating etiologic focus of infection and without a systematic hygienic management is irrational and most unjust to the patient.

Journal of Nervous and Mental Disease, Lancaster, Pa.

September, XLI, No. 9, pp. 553-616

60 *Hemiatrophy of Cerebellum in Case of Late Catatonia. A. E. Taft and M. E. Morse, Boston.
61 *Pneumograph, New Instrument for Recording Respiratory Movements Graphically. A. Knauer and W. J. M. A. Maloney, New York.
62 Comparison of Wassermann Reaction among Acute and Chronic Insane. I. A. Darling and P. B. Newcomb, Warren, Pa.

60. **Hemiatrophy of Cerebellum.**—Taft and Morse report a case of focal unilateral cerebellar disease of long standing (months or years) apparently quiescent (no signs of exudation) and beyond question due in large measure to arterial thrombosis (no histologic or clinical evidences of syphilis; Wassermann reaction negative in pericardial fluid post mortem). The lesion was not in the nature of an old cyst of softening, but rather the result of gradual shrinkage and induration, possibly due to an unusually gradual thrombosis.

61. **Pneumograph, New Instrument.**—The instrument devised by Knauer and Maloney consists of two parts, a chest piece to which the respiratory movements are communicated and a recording apparatus which writes those movements. The tambours contain no rubber to leak. The recording paper needs not to be blackened and neither varnishing nor drying is necessary. A roll is used instead of a single sheet, so that observations may be continued for prolonged periods. The driving machinery is practically self-regulating. The writing point pressure is self-adjusting. The instrument is said to make the recording of the respiration movements as simple as is the application of electricity. This pneumograph is of service in all psychogenic speech disturbances such as stammering, aphonia spastica, etc., cases in which breathing exercises are indicated; in the treatment of obsessions and psychogenic fears, which can be beneficially influenced by methodical regulation of the rate and character of the respiratory movements; and in the teaching of conscious control of muscular movements. The machine is also of use in obtaining an index to emotional reactions in mental states.

Kentucky Medical Journal, Bowling Green

September 15, XII, No. 18, pp. 529-578

63 Gonorrhea in Male. R. T. Hocker, Arlington.
64 Help the Hospital. E. G. Daviess, Owensboro.
65 Uterine Displacements: Varieties and Treatment. O. W. Brown, Lenoxburg.
66 Problems in Infant-Feeding. J. T. Dixon, Owensboro.
67 Dysmenorrhea Cured by Treating Nose. Report of Case. D. M. Griffith, Owensboro.
68 Our Ethics. T. H. Gamblin, Monticello.
69 Some Functions of Acrenals and Thyroids. G. J. Hermann, Newport.
70 Fecundation, Conception and Gestation. W. E. Reynolds, Hopkinsville.
71 Chronic Intestinal Stasis: Its Causes and Relief. J. E. Pirrung, Covington.
72 Treatment of Pellagra. R. F. Robinson, Hopkinsville.

Medical Record, New York

September 26, LXXXVI, No. 13, pp. 531-572

73 Chronic Intestinal Stasis. A. C. Jordan, London.
74 *Fractures and Burns. J. A. Wyeth, New York.
75 Operations for Inguinal Hernia under Local Anesthesia. J. A. Bodine, New York.
76 Fractures. A. Lyle, New York.
77 Cancer. W. S. Bainbridge, New York.
78 Salvarsan in Syphilis. A. J. Crowell and J. P. Kunroe, Charlotte, N. C.
79 *Comparative Wassermann, Cobra and Globulin Tests in Syphilis. W. J. Stone, Toledo, Ohio.
80 Backache and Posterior Parametritis. A. Jacoby, New York.
81 Abrams' Method of Treatment in Aneurysms. A. Abrams, San Francisco.

74. **Fractures and Burns.**—When a severe burn or scald is encountered, Wyeth says, the immediate indication is relief of pain by the hypodermatic administration of morphin, or by some form of opium given by rectum or stomach. The most convenient local remedy is a saturated solution of baking soda in water, with submersion of the burned surface, if possible, or a mixture of bicarbonate of soda and cornstarch, one teaspoonful of each to a quart of water. The dressing should be kept wet with the solution, which is applied freely to the burned area. After five or six hours the free application of the following mixture, made into an emulsion, will be found beneficial:

Ichthyol—℥ss, cotton-seed or olive oil—O.ss, limewater—O.ss. This should be continuously applied for the first three to five days during the stage of acute inflammation. In order to bring about rapid repair of the skin the following ingredients may be used: Lead plaster, liquid albolene, lanolin, vaselin—āā ℥j. These are melted together, and, when cooling, 40 minims of ichthyol added.

Either of these ointments should be applied thickly on the soft linty side of canton flannel, on surgeon's lint, or on several layers of sterile gauze. The application should be repeated daily at first, after opening all blebs. In opening the blebs care should be taken not to remove the epidermis of the bleb, as this may become revitalized, thus greatly accelerating the healing process. In changing the dressing it is important not to disturb new granulations, but simply to wipe over them. When healing is well under way the dressing need be changed only every second or third day. In the treatment of the depression of shock which often follows severe burns, stimulation with whiskey or brandy, by enema or by mouth, is indicated, as well as the hypodermic injection of morphin. Physiologic salt solution, introduced by the colon, or injected into the areolar tissue, is of great value.

In an emergency when the remedies mentioned may not be obtained, a coating of ordinary white lead, as mixed for use in painting dwellings, is an efficient protection when poured over the burn. Flour sprinkled over until all the excoriated surface is well hidden is a method of treatment which is applicable in almost any emergency. Rubber tissue, or oil-silk, sterilized and laid over the raw surface, with cotton batting applied over it, but never directly on the burned surface, is equally efficient. Lint, or a soft cloth, dipped in a 2 per cent. carbolized oil, may be employed directly on the burn. No pressure should be exercised in holding the dressings in place. When the back and posterior aspects of the extremities are chiefly involved, the prone position is of necessity maintained.

79. **Comparative Wassermann, Cobra and Globulin Tests in Syphilis.**—The observations made by Stone comprise comparative cobra, Wassermann, and globulin tests in 150 individuals. All "suspicious" reactions have been excluded. In 30 normals and controls the Wassermann and cobra tests were negative. In 6 of these the globulin test was negative in spinal fluid. In 90 other normals and controls the cobra test was negative. In 22 patients with secondary syphilis the Wassermann and cobra test were positive. In 5 of these the globulin test was also positive in the spinal fluid, while in 7 the globulin test was positive in the blood-serum. In 7 patients with active and latent tertiary syphilis the cobra blood test was positive, and the globulin test in blood-serum and spinal fluid were positive. In 24 late tertiary and clinically cured cases both Wassermann and cobra tests were negative. In 1 patient with cerebral lues the Wassermann and cobra tests were negative while the globulin test was positive in blood-serum and spinal fluid. In 7 patients with syphilis the cobra test was positive and the Wassermann was negative, while in 14 instances the Wassermann was positive

and the cobra negative. Two of the latter were intances of early secondaries five and six weeks after infection, in which the diagnosis was not in doubt.

Military Surgeon, Chicago

September, XXXV, No. 3, pp. 211-310

82 Problems of Routine Sanitary Service. P. Waterman, Conn. N. G.
83 Organization of Red Cross Personnel for War. G. M. Blech, Ill. N. G.
84 Case of Leontiasis Ossium. J. R. Church, U. S. Army.
85 New Method of Carrying Patient, with One or Two Bearers, without Litter. F. H. Trindler, U. S. Army.
86 Blue Button, an Undescribed Type of Tropical Ulcer of West Indies. G. C. Dolley, U. S. Army.
87 Rhinal Myiasis. Report of Two Cases. E. C. McCulloch, U. S. Army.
88 Prevention of Scurvy. P. M. Ashburn and F. Schmitter, U. S. Army.
89 Id. Effect of Boiling on Antiscorbutic Properties of Canned Cabbage. F. Schmitter, U. S. Army.

Missouri State Medical Association Journal, St. Louis

September, XI, No. 3, pp. 113-156

90 *Sprains. H. C. Shuttee, West Plains.
91 Diagnosis of Congenital Syphilis in Infants and Children. E. H. Schorer, Kansas City.
92 Placenta Praevia. F. T. Van Eman, Kansas City.
93 Treatment of Deformities Following Infantile Paralysis. R. M. Schauffler, Kansas City.
94 Diagnostic Procedures in Urology. C. Capell, Kansas City.
95 Intermittent Hydronephrosis. C. W. Russell, Springfield.
96 Diabetes. L. C. Ross, Springfield.
97 Hyperplasia of Thymus. Report of Case. W. H. Douglass, Benton City.
98 Quinin and Urea Hydrochlorid as Local Anesthetic in Exploratory Operations. E. D. Twyman, Independence.

90. **Sprains.**—The modern and correct treatment of a sprain, Shuttee says, is by proper strapping, exercise and massage. The strapping must be applied in such a manner as to envelop the injured joint completely, otherwise the requisite degree of pressure cannot be obtained which is necessary to secure compression when the parts are exercised. In this way complete and early recovery may be brought about, and the dangers greatly decreased. In addition to this, massage should be practiced every time the strapping is changed, beginning at the upper part of the swelling, the manipulation being a steady, uniform gentle movement of stroking or squeezing, directed upward from the distal part of the joint, but always commencing on the proximal side of the injury, or at the proximal limit of the swelling. The object is the emptying of distended veins and waterlogged tissues. By beginning pressure at the upper part and gradually descending in stroking much of the effusion can be pressed out at each sitting, and usually in a few days the swelling is gone. The sprained part, as already stated, should be used as soon as properly supported by adhesive plaster, and thus by muscular contraction the effused material is rapidly pressed out of the injured part.

If the patient is not seen until after great swelling has taken place, it may be best to rub the joint two or three times a day until the swelling is somewhat reduced, when the plaster should be applied. As soon as the plaster has been applied, the patient should be made to walk and in the first few attempts an assistant may be necessary partly to support him; but he should be strongly impressed with the fact that his recovery will be rapid in direct proportion to the use of the joint. The first few attempts to walk will be accompanied by some pain, and at times this will be great but it will diminish at each succeeding attempt, and soon become negligible.

New Jersey Medical Society Journal, Orange

September, XI, No. 9, pp. 431-492

99 Some Important Clinical Observations in Blood-Pressure Studies. P. Marvel, Atlantic City.
100 Recovery from Tuberculous Meningitis. P. A. Potter, East Orange.
101 Reduction of Infant Mortality: How Can It Best Be Accomplished? T. N. Gray, East Orange.
102 Oxyuris Vermicularis as a Carrier. F. C. Henry, Perth Amboy.

New Mexico Medical Journal, Las Cruces

September, XII, No. 6, pp. 153-182

103 Case of Adiposis Dolorosa. C. T. Sands, Las Cruces.
104 Case of Epilepsy Treated with Crotalin. R. E. McBride, Las Cruces.

New York Medical Journal

September 19, C, No. 12, pp. 549-596

105 Hemophilia and Hemophilac Arthritis. M. H. Vegas, Buenos Aires, Argentina.
106 *Pains Anomalously Distributed in Cardiovascular Disease. H. L. Elsner, Syracuse.
107 Treatment of Cancer by Electric Methods. A. F. Holding, New York.
108 *Case of Hermaphroditism. G. S. Foster, Manchester, N. H.
109 Efficiency and Quality of Life. C. A. Penrose, Baltimore.
110 Tuberculization and Immunization. M. Fishberg, New York.
111 Treatment of Sunstroke and Heat Prostration. I. Bram, Philadelphia.
112 Dust. J. A. Guthrie, Portsmouth, Va.
113 Pulmonary Tuberculosis Complicating Operations for Appendicitis. A. C. Burnham, New York.
114 Tyrosin Crystals in Urine of Normal Pregnant Woman. J. Rosenbloom and W. E. Gardner, Pittsburgh.

September 26, No. 13, pp. 597-648

115 Modern Diagnostic Methods in Syphilis. J. A. Fordyce, New York.
116 *Medical Treatment of Intestinal Stasis. R. W. Wilcox, New York.
117 General Paralysis of Insane. H. W. Mitchell, Warren, Pa.
118 Prognosis in Acute Appendicitis. E. MacD. Stanton, Schenectady.
119 Tuberculosis Crusade: Parallel. T. J. Mays, Philadelphia.
120 Some European Clinics. R. J. Manion, Fort William, Ont.
121 Use of Scopolamin-Morphin in Labor. A. J. Rongy and S. S. Arluck, New York.
122 Value of Abderhalden Test for Cancer. I. Levin, New York.
123 Artificial Pneumothorax in Pulmonary Tuberculosis. C. R. Kingsley, Jr., West New Brighton, Staten Island.
124 Newer Teachings Concerning Diseases of Gastro-Intestinal Tract. M. I. Knapp, New York.

106. **Pains in Cardiovascular Disease.**—Pain which persists in the precordial region, which is associated with irregularity of the heart, with rapid pulse or occasional shortness of breath, even without convincing physical signs, Elsner states, requires close watching and will ultimately be found dependent on some abnormality of the heart, either of its musculature or of its arterial or nerve supply. He looks with suspicion on precordial pain associated with palpitation, *without prominence of the eye*, with marked or little change in the thyroid, with or without the Graefe symptom. In the early and late stages of exophthalmic goiter, often with changes in the musculature of the heart, precordial pain may be present.

Embryonal heart sounds in the adult, with associated dyspnea and pain, are always suspicious of degenerative changes in the heart muscle associated with vascular anomalies. Valvular lesions are by no means free from precordial and referred pains. Irregular and intermittent hearts with cardiac tumult are frequently associated with pain, either in the region of the heart or at a distance. This pain often increases as hypertrophy of the organ progresses. Sudden, severe, and alarming pain the precordium, occasionally in the neck, accompanies each intermission in some cases and makes the patient conscious of a halting heart. There is a class of cases in which the blood-presure is normal, there is pain in the precordium, anemia with numbness, vertigo, a sense of weight rather than pain in the region of the heart, no murmur, a small pulse and a rapid heart during a long period, then dyspnea, aggravated by movement of the arms, in which there is myocardial degeneration. Some cases with the heart muscle degenerated may show high blood-pressure even in their terminal stages. There is a class of myocardial degeneration associated with slight degenerative changes of a sclerotic nature in the smaller arteries of the heart, in which there are transitory dilatations of the left ventricle, giving rise to evanescent systolic murmurs. These may be associated with severe precordial distress at times, particularly if of specific origin. As the tone of the heart improves, the pains yield, the dilatation and the murmurs disappear. When these cases occur in young subjects, they are of either toxic or specific origin. If not relieved they lead to marked muscular insufficiency and frequent attacks of angina pectoris, and are often associated with aortic disease. Hysterical young women frequently complain of painful pulsation referred to the abdominal aorta in the epigastrium. The absence of expansile lateral pulsation and the bruit posteriorly must always urge against the presence of aneurysm.

Pain referred to the thorax with dyspnea, with or without physical signs, aggravated by movement of the arms upward, may be considered to be of cardiac origin in most cases, par-

ticularly if such movement increases dyspnea at the same time. Systematic blood-pressure study in almost all cases, has convinced Elsner that arteriosclerosis is not always associated with high systolic blood-pressure. While in the majority of cases arteriosclerosis is a condition with high blood-pressure, the exceptions are of sufficient frequency to demand consideration in diagnosis. Most of his cases of so-called pseudo-angina, not neuroses, proved ultimately, if in young subjects, to be due to cardiac syphilis with arterial and consecutive myocardial degeneration; in older subjects, to true angina dependent on coronary changes.

108. **Case of Hermaphroditism.**—The particular oddity of Foster's case was the presence of a well-formed testicle in close proximity to the right ovary.

116. Abstracted in THE JOURNAL, July 18, 1914, p. 271.

New York State Journal of Medicine

September, XIV, No. 9, pp. 429-470

125 *Metrorrhagia at Puberty. H. C. Coe, New York.
126 Splenectomy for Splenic Anemia. R. S. Fowler, Brooklyn.
127 Atypical Pneumonias of Infancy and Childhood. E. J. Wynkoop, Syracuse.
128 Pleural Lymph Flow: Causes of Its Increase and Decrease. A. H. Garvin, Ray Brook.
129 Surgical Diagnosis and Autopsy Findings. H. G. Weiskotten, Syracuse.
130 Intra-Ocular Sarcoma. W. A. Weidler, New York.
131 Some Sociologic Aspects of Ophthalmology. E. M. Alger, New York.
132 Surgery of Maxillary Antrum: External Route. S. H. Lutz, Brooklyn.
133 Surgery of Maxillary Antrum: Intranasal Route. L. M. Hurd, New York.
134 Correction of Nasal Deformities by Injection of Paraffin. H. Smith.
135 Diet in Health and Disease. C. C. Sutter, Rochester.
136 Causes of Renal Pain. E. M. Stanton, Schenectady.
137 Lightning Stroke. I. M. Slingerland, Fayetteville.

125. Abstracted in THE JOURNAL, May 30, p. 1750.

Ophthalmic Record, Chicago

September, XXIII, No. 9, pp. 433-486

138 Samoan Conjunctivitis. C. F. Ely, U. S. Navy.
139 External Canthotomy. R. S. Lamb, Washington, D. C.
140 Use of Snare as Final Step in Enucleation of Eye. H. R. Wright, Columbus, Ohio.

Tennessee State Medical Association Journal, Nashville

September, VII, No. 5, pp. 187-226

141 *Arteriosclerosis of Cerebral Vessels. J. Phillips, Cleveland.
142 Cancer of Uterine Cervix. J. M. Maury, Memphis.
143 Cancer Problem. M. Goltman, Memphis.
144 Local Anesthesia in Rectal Surgery. D. R. Pickens, Nashville.
145 Malaria and Country Practitioner—Plea for Blood Examination. H. Lockhart, Coalmount.
146 Case of Fracture of Base of Skull, with Unusually Good Recovery. J. B. Lackey, Ripley.

141. Abstracted in THE JOURNAL, May 2, p. 1428.

Wisconsin Medical Journal, Milwaukee

September, XIII, No. 4, pp. 131-174

147 Points of Contact in General and Orthopedic Practice. F. J. Gaenslen, Milwaukee.
148 Volkmann's Ischemic Paralysis. Special Reference to Nerve Involvement. C. J. Habhegger, Watertown.
149 Some Aspects of Cardiorenal Disease. L. M. Warfield and R. L. Schulz, Milwaukee.
150 Tuberculosis of Tracheobronchial Lymph-Nodes in Childhood. G. R. Ernst, Milwaukee.
151 Roentgen Diagnosis of Obstruction in Alimentary Tract. P. Eisen, Chicago.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 12, II, No. 2802, pp. 457-492

1 Etiology and Treatment of Carcinoma of Tongue. W. G. Spencer.
2 *Method of Opening Abdomen for Appendicectomy. G. H. Edington.
3 *Pott's Disease in Cervical Region. Methods of Bony Splinting. A. Don.
4 *Diagnosis of Chronic Pulmonary Tuberculosis in Infancy and Childhood. I, D. B. Lees; II, C. Riviere, and III, W. I. Bruce.
5 Conditions Simulating Chronic Appendicitis. J. Morley.
6 *An Unusual Case of Appendicitis. E. W. M. H. Phillips.
7 Case of Rupture of Kidney from Slight Trauma. J. L. Atkinson.
8 Treatment of Acute Gonorrhea in Men. J. G. Hayes.

2. **Opening Abdomen for Appendicectomy.**—The principles underlying Edington's method are: (1) Division of the posterior sheath of the rectus transversely, in the direction of the aponeurotic fibers, and (2) preservation of the muscle itself to form a support to the scar. The method of operation consists in exposing the rectus muscle, loosening it in its sheath, retracting toward the middle line, and transverse division of the posterior sheath and peritoneum. After the appendix has been removed and the posterior sheath and peritoneum sutured, the rectus is allowed to fall back into its normal position, and the anterior sheath and superficial wound closed.

3. **Pott's Disease in Cervical Region.**—The method Don employs is to expose the spines from below the seventh cervical to above the second dorsal spine by an ordinary central incision, clear well of periosteum the seventh and under-side of second spines, and then to pack the space with gauze to arrest hemorrhage. A piece of rib long enough to stretch from the tip of the seventh spine to well over the second is quickly excised subperiosteally from a most convenient part of the chest wall next the operator. A hole is drilled in the wider (generally anterior) end of this piece, big enough to fit easily over the seventh spine, which has been cleared of periosteum to receive it. When the piece is adjusted over the seventh spine, with the convexity forward, it is then easy to mark and cut across at the point which will just fit into the groove below the second spine. A small hole for a suture is drilled in the upper end of the piece of rib, and through this a stitch of silver wire or catgut is put and a curved round needle threaded to one end of it. With the needle it is quite easy to get a good grip of the interspinous ligaments and tendons between the second and first vertebra or base of the skull and thus to fix the upper end of the splint. Much does not depend on this suture, for the muscles and fascia when sutured together over the splint in closing the wound are sufficient to hold it in good position till healing takes place. Should the second spine not be available owing to the disease being in the first or second vertebra, a length of rib is taken sufficient to be jammed against the base of the skull and fixed there as before.

4. **Chronic Pulmonary Tuberculosis in Childhood.**—The point Riviere puts forward as something new is the fact, hitherto unrecorded, that interscapular impairment as an early sign of tuberculosis of tracheobronchial glands occurs on the right side only. Evidence is collecting to point to pressure on the right pulmonary artery in which it passes in front of the bifurcation glands as the causation of these right-sided signs. The bifurcation glands are those most commonly tuberculous of all the thoracic group; they show the most extreme changes, and hence are probably the first to suffer. Hence a sign which depends on enlargement of the bifurcation glands, if subsequent research confirms this, must be of considerable value in the diagnosis of tuberculous disease in the chest.

It is an increase in size and in dulness of this area on the right side which constitutes the sign. The normal impairment becomes more marked, being often sufficient to be termed "dulness," and extends out 2 or 3 inches from the middle line. The area extends downward to the sixth, seventh, or even the eighth dorsal spine while its outer limit, mapped by percussion from without inward, forms a well-defined curved line, though the note outside it is sometimes not so good as that over corresponding parts of the opposite lung. It is interesting and important that this clear outer limit can be shown to undergo a distinct respiratory fluctuation during deep breathing. There is also present in nearly all cases slight impairment at the apex of the lung, both front and back, with some diminution of the area of apical resonance as described by Kroenig.

6. **Unusual Case of Appendicitis.**—Phillips cites the case of a collier who was suddenly seized with abdominal pain of such severity as to necessitate the administration of chloro-

form. On the following day the patient complained of sharp, continuous pain situated under the heart and in the upper part of the abdomen, of obstinate constipation, and of vomiting of clear green fluid. In 1887 he had a similar pain which lasted five days; it came on after a fall from a tree. On five occasions since then he had suffered from the same pain, of greater or less severity, the attacks lasting five or six days.

His face was pale and typically hippocratic and covered with beads of perspiration. The tongue was clean, the pulse was 78, and the temperature 96.8 F. The abdomen was not distended. The respiratory movements were good, but better on the right side than on the left. Superficial and deep epigastric tenderness were present, and there was a zone of hyperesthesia in the left hypochondrium. There was deep tenderness on pressure over the left kidney region posteriorly. The whole of the left side was tympanitic. The liver dulness was normal. The apex of the left lung showed some apical retraction, Kronig's sign being present, and there was some impairment of breath sounds. There was a slight systolic murmur at the apex of the heart, conducted out to the axilla. The urine was normal. There was slight leukocytosis. Loewi's adrenalin mydriasis test was applied with a view to determine the possible presence of pancreatitis. The result was negative. There was nothing definitely indicative of perforation of a peptic ulcer. Repeated enemas were unavailing.

The patient appeared to improve slightly, but in about eight hours he suddenly became much worse; the temperature fell to 96; the pulse went up to 102, and became very thin. He was now evidently moribund. Operation was out of the question and in a few hours the patient died, evidently of shock.

At the post-mortem examination the cæcum and ascending colon were enormously distended and hyperemic. This part of the gut was freely movable, and had a large mesentery. It lay looped between the hepatic and splenic flexures, below the transverse colon and great omentum, and suspended on the left to the cardiac end of a dilated stomach, by the tip, middle and mesentery of a long recurved appendix. The appendix when unravelled, was 9½ inches long, was full of hard concretions, and was gangrenous at its tip. The tip was densely adherent to the greater curvature of the stomach on the left side, and by fine adhesions to the spleen. The right iliac fossa was occupied by coils of small intestine.

Journal of State Medicine, London

September, XXII, No. 9, pp. 513-576

9 Thirty Years in History of Tetanus. L. Vaillard.
10 State Medicine Problems of Coming Ten Years. W. L. MacKenzie.
11 Public Health Crusade. W. P. Paterson.
12 Value of Incubation Test in Examination of Water and Other Products. S. Deléphine.

Journal Tropical Medicine and Hygiene, London

September 1, XVII, No. 17, pp. 257-272

13 Tinea Capitis Tropicalis in Anglo-Egyptian Sudan. A. J. Chalmers and A. Marshall.

Lancet, London

September 12, II, No. 4750, pp. 683-730

14 Dysentery (To be continued.) F. M. Sandwith.
15 Principles Which Govern Ultimate Results of Hare-Lip and Cleft-Palate Operations. G. V. I. Brown.
16 *Cases of Recovery from Detachment of Retina. C. Higgens.
17 *Persistent Low Arterial Blood-Pressure in Carcinoma of Tongue with Amyloid Disease. H. D. Rolleston.
18 Case of Ganglion of Ring Finger. M. C. S. Lawrance.
19 Family History of Polydactylism. A. B. Raffle.

16. **Recovery from Detachment of Retina.**—The three cases cited by Higgens are examples of a disease the treatment of which leaves much to be desired, and so far as results are concerned is no better now than it was many years ago. All operative treatment is, in Higgens' experience, worse than useless. He has never seen a case in any way benefited by any of the operations that have been recommended, but has seen some which have been made worse. The treatment that seems to hold out the best, if only a slight, hope of cure is by rest in the horizontal position continued for weeks, and measures which may be supposed to cause removal of fluids—such as sweating, purgation, absorbents, and abstinence from fluid nourishment, as far as it is possible to live without it.

17. **Low Blood-Pressure in Carcinoma of Tongue with Amyloid Disease.**—The persistent low arterial blood-pressure in Rolleston's case he believes was due to the general asthenia and the amyloid disease, and is unique in his experience, as he has not seen a blood-pressure as low as 70 mm. Hg except in cases of advanced Addison's disease and in cardiac failure shortly before death. In otherwise healthy persons during the fever of pneumonia, Rolleston has seen a systolic blood-pressure of 80 mm. Hg. The diastolic blood-pressure taken by the auscultatory method ten days before the final collapse, was 35 mm. Hg with the normal difference of 30 mm. between the systolic and diastolic pressure.

The tongue in this case was extensively involved by carcinoma, the anterior portion being much eroded and the organ practically fixed. At the back the growth had extended to the left anterior pillar of the fauces and to the soft palate. The condition was quite inoperable. There was some slight enlargement of the cervical glands, but these did not increase in size. The heart was normal. There was general bronchitis on admission but this cleared up, though there were often some rhonchi over the root of the right lung. There was constantly albuminuria associated with edema of the feet, at first transient and mainly after the patient had been up, and slight purpura on the hands. The specific gravity of the urine varied from 1.002 to 1.022. Casts were not found. There was never any fever, relatively little pain and weight was remarkably maintained. The liver and spleen were never found to be enlarged. In June edema of the legs became more prominent and the albuminuria increased. In July there was not much change until the seventeenth, when he collapsed and was in great pain. The right leg became livid and cold. He died the next day.

Practitioner, London

September, XCIII, No. 3, pp. 301-444

20 Chronic General Periodontitis. J. F. Colyer.
21 Mental Deficiency Act as It Affects Practitioner. A. F. Tredgold.
22 *Occurrence of Bilateral Extensor Response in States of Unconsciousness. C. O. Hawthorne.
23 Psoriasis. G. Pernet.
24 Diathermy and Its Use in Surgery. E. P. Cumberbatch.
25 Relation of Tuberculosis to Other Diseases Including Pregnancy. H. L. Tidy.
26 Otorrhea. H. L. Whale.
27 Ophthalmia Neonatorum. S. Stephenson.
28 Summer Diarrhea. L. Mandel.
29 Scarlet Fever. C. B. Ker.
30 Recent Public Health Work. J. Priestley.
31 Pink-Eye. C. H. Brown.

22. **Bilateral Extensor Response.**—The summary of Hawthorne's preliminary statement is, (1) that, as an extensor response may be present during sleep, after an epileptic convulsion, under the influence of certain drugs, and in association with the peripheral irritation of chronic joint diseases, it must be accepted that the conditions necessary for such a response may be provided by non-organic modifications of the central nervous system; (2) that unconsciousness may possibly be one of these modifications, and (3) that the existence of the extensor response in sleep, and in the stupor of exhaustion which follows an epileptic fit, renders the second of these propositions not improbable.

Journal de Médecine de Bordeaux

August 2, LXXXV, No. 31, pp. 515-530

32 Technic for Intravenous Injections of Neosalvarsan. Joulin.
33 *Serotherapy of Tuberculosis. (Un mot sur la sérothérapie antituberculeuse.) Grasseteau.

33. **Serotherapy of Tuberculosis.**—Grasseteau states that the tubercle bacilli become modified in the course of tuberculosis in the human body and thus the toxins they secrete change at different periods. It follows that antitoxins useful at one period lose their power at other stages of the disease. The success of diphtheria antitoxin is due to the fact that diphtheria is an acute and rapid disease which runs its course so swiftly that the bacilli have only one stage of development and secretion. It is very different with tuberculosis, and animals immunized by injection of tubercle bacilli have in their serum only the antibodies generated to combat the

first stage of the tubercle bacilli's evolution. Their serum consequently has no antitoxic properties except for the toxin of this first stage. It seems foolish to try to produce antitoxin by injecting tubercle bacilli or tuberculin as the antibodies to each thus are always the same and very limited in their action. Natural toxins should be used to generate antitoxin, he insists, and they should be taken from the serum of animals at different stages of the disease. By injecting serum from such animals into other animals, known to be more or less immunized, we may perhaps cause the development in their serum of complete antitoxins. In short, he reiterates in conclusion, it is probably only by injecting natural toxins from different stages of the disease that we can succeed in obtaining an antitoxin for tuberculosis that will cover the whole scale of the toxins generated in the long course of tuberculosis.

Beiträge zur klinischen Chirurgie, Tübingen

July, XCIII, No. 1, pp. 1-222

34 Typical Disease of Upper Epiphysis of the Femur. E. Schwarz.
35 Fascia Flap in Treatment of Ankylosis of the Lower Jaw. (Operative Behandlung der wahren Unterkieferankylosen.) P. Kornew.
36 Etiology of Gastric and Duodenal Ulcers. F. Bode.
37 Metastasis of Goiter Tissue. (Strumametastasen.) E. Crone.
38 Operative Treatment of Primary Cancer of the Liver. (Lebercarcinom.) E. Bundschuh.
39 Operative Correction of Vulvar Anus. J. Weiss.
40 Actinomycotic General Infection, with Metastases. H. Kolaczek.
41 Exclusion of the Pylorus. F. v. Tappeiner.
42 Recurring Hernia. R. Welzel.
43 Dislocation of the Metatarsus. (Luxationen im Lisfranc'schen Gelenk.) T. Herrmann.
44 Laceration of Bronchus from Contusion. (Subkutane Bronchuszerreissung.) J. Vierheilig.

Berliner klinische Wochenschrift

August 31, LI, No. 35, pp. 1589-1604

45 *Cancer on Hand Consecutive to Battle Wound. (Handkrebs als Spätfolge einer Kriegswunde?) H. Coenen.
46 The Blood-Picture with the Intracutaneous Tuberculin Reaction with Various Technics. (Das cytologische Bild der Intracutanreaktionen mit den Deycke-Much'schen Partialantigenen der Tuberkelbacillen und dem Alttuberkulin.) T. Kohrs.
47 *Brachial Neuralgia; Eight Cases. O. B. Meyer.
48 *Signs of Apical Disease. (Zur Diagnostik der Erkrankungen der Lungenspitzen.) R. Ehrmann.
49 Diagram Showing the Plan of Arrangements for Caring for the Wounded in War. (Skizze des Kriegssanitätsdienstes.)

45. **Tardy Results of Wounds in War.**—Coenen remarks that not much has been published on the tardy results of injury received in war, but the scar is liable to become the seat of a cancer late in life. This happened in a case he reports in detail, a cancer developing in 1913 in the scar on the back of the hand injured in a bomb explosion in 1886. The man emerged otherwise unscathed from three campaigns to have his arm amputated at 74. Coenen knows of five other cases of cancer on the back of the hand consecutive to trauma or irritation of a wart. Cancer of the palm is rare. Michael, who has compiled sixty-four cases of cancer on the back of the hand, could find only three in which cancer had developed in the palm of the hand, but Grawitz has encountered two since then in young farm-hands. Coenen comments on the frequency of wounds of the hand in modern warfare; he had 104 cases in his charge during the first Balkan War and forty-two in the second. The injury was generally extensive and jagged and usually on the back of the hand, so that cancerous degeneration later in life must be reckoned with as a possible aftermath of war.

47. **Brachial Neuralgia.**—Meyer reports some cases of brachial neuralgia in which throwing the head back, as in shaving, starts pain in the arm or increases it if already present. This pain in shaving runs from the back of the neck down into the arm. In one typical case with this symptom he succeeded in partially arresting the neuralgia by a paravertebral injection of cocain to reach the root of the nerve, and completed the cure by a peripheral injection of alcohol to block the posterior inferior cutaneous brachial nerve just above the elbow, as the remaining pain was mainly along this nerve. It disappeared for about a year and then returned, but subsided again after two injections, first with a local anesthetic, the second with alcohol. He has had similar experiences in other cases of brachial neuralgia and sciatica in which, after injection of salt solution on the root of the nerve had arrested part of the neuralgia, the cure was completed by a peripheral injection of alcohol. In three of seven cases of brachial neuralgia the above "shaving sign" was pronounced. The pain in the arm and shoulder is sharper when, as the head is thrown back, it is bent over a little toward the sound side. This sign does not occur with pain in the arm of other origin. With obstinate or especially severe brachial neuralgia the region should be examined with the Roentgen rays to discover any new growth in or near the cervical vertebrae or plexus or cervical ribs. His experience has thus been very favorable with paravertebral, epidural injections in the neck, supplemented by a peripheral injection of alcohol. The latter should be tried first as it might answer the purpose alone.

48. **Diagnosis of Apical Disease.**—Ehrmann relates that the percussion findings differed on the two sides and an apical process seemed beyond question in two cases in which necropsy revealed that the apices were entirely sound and that there was nothing abnormal but adhesions in the pleura. Similar areas of dulness were found in four of twenty-three cadavers and yet the lungs were sound; but there were adhesions in the pleura.

Ehrmann found further that in patients with an apical affection a dose of atropin rendered more distinct the difference between the pupils which is characteristic of apical trouble. The muscle dilating the pupil is more irritable, and this is effectively shown up by paralyzing the oculomotor muscle with atropin or belladonna by the mouth. He has the patient take from 5 to 15 drops of a 0.1 per cent. solution of atropin on a lump of sugar, and examines the pupil every fifteen minutes. By instillation into the eye it is by no means so effectual, but cocain by the mouth or subcutaneously answers the same purpose.

Medizinische Klinik, Berlin

August 30, X, No. 35, pp. 1421-1440

50 Battle-Field Surgery. (Chirurgie im Felde.) A. Köhler. To be continued.
51 *Prophylaxis of Cholera. F. Rosenthal.
52 Treatment of Club-Foot by General Practitioner. (Die Klumpfussbehandlung in der Praxis.) G. Magnus.
53 *Medicated Vaginal Douches During Pregnancy and Parturition. (Ueber medikamentöse Scheidenspülungen bei schwangeren Frauen und während der Geburt.) E. Zweifel.
54 Inversion of Uterus; Two Cases. (Prolapsus uteri inversi.) G. de Rossignoli.

51. **Prophylaxis of Cholera.**—Rosenthal discusses the danger of the introduction of cholera into western Europe by the Russian troops as prisoners or by the occupation of cholera-infested towns by the Germans, and he deplores the fact that serum prophylaxis of cholera is far from being as effectual as vaccination against small-pox. It is impossible to immunize troops in the field with it, as the serum induces high fever and there is a negative phase for a few days. The quarantine measures and supervision of rivers which have been successful in keeping out cholera in the past are nullified by the conditions of war, but each person can effectually protect himself against cholera by extreme cleanliness and avoiding unboiled water and uncooked foods. The most important general prophylactic measure is the isolation of the sick. The disease starts almost always with diarrhea, and although the patient may still feel quite well yet he is already scattering germs in his diarrheic stools. A soldier with profuse diarrhea should go at once to the hospital and stay there. Even before it is possible for bacteriologic examination of the stools, the leukocyte count and blood-picture may reveal the presence of cholera infection and permit the discharge of the men with ordinary harmless diarrhea.

Even direct exposure to cholera does not necessarily entail the disease unless the system is depressed from any cause, and he urges for this reason restriction of the sale and use of liquor, avoidance of physical excesses, raw fruit, etc. Before eating and especially before preparing food the hands should be thoroughly cleansed with soap and water. The face and particularly the mouth should not be touched by the hands. All fluids should be boiled before drinking, except beer, wine

and natural mineral waters. If water has to be taken raw, the danger of infection can be materially reduced, he says, by adding a little acid, a knife-tip of citric acid to half a liter, or 20 drops of liquid phosphoric acid. The army corps should have a supply of each. He insists that it is unnecessary to use a disinfectant for the hands, and that spraying the rooms and clothes with a solution of phenol does no good whatever and merely serves to lull into false security. Disinfectants are of no use for the desired purpose except in the privies, and even here milk of lime is preferable to phenol. The linen and the dejecta from the sick require of course thorough sterilization. There is no transmission of cholera, typhus or dysentery through the air. In Bulgaria he used to see persons extremely punctilious in singeing their dishes with alcohol and toasting all their bread, and yet they would eat raw fruit and drink unboiled water.

53. **Vaginal Douches in Pregnancy and Parturition.**—Zweifel says that the consensus of opinion seems to be that in normal conditions vaginal douches are superfluous. With a pathologic secretion and the date of the expected delivery over ten days away, he advocates vaginal douches with a 0.5 per cent. solution of lactic acid, according to Schweitzer's practice. A daily douche is given, boiling all the instruments beforehand each time. If delivery is impending, he advises mechanical cleansing of the vagina with 1 or 2 liters of saline. This is followed by injection of 100 or 200 c.c. of a 1 to 2,000 solution of mercuric chlorid. This can be repeated after twelve or twenty-four hours, repeating it each morning. There is danger of poisoning from the mercury if larger amounts are used. A solution of silver nitrate might be used, or the vagina wiped out with tincture of iodin. He has had puerperal fever develop in only one of the fourteen pregnant women with pathologic secretion treated in this way, that is, in 7.1 per cent.

Münchener medizinische Wochenschrift, Berlin

August 4, LXI, No. 31, pp. 1713-1768

55 *Improved Methods for Repeated Physical-Chemical Examination of Blood. (Untersuchungen von Blutseris.) J. Traube.
56 Depth of Biologic Action of Radiant Energy. (Biologische Reichweite der Radium-Mesothorium- und Röntgenstrahlen.) B. Krönig.
57 *Changes in Technic for Roentgen Treatment of Cancer. (Wandlungen in der Krebsbehandlung mit Röntgenstrahlen.) J. A. Amann.
58 *Colloidal Nitrogen in Urine as Aid in Differentiation of Cancer. (Der kolloidale Stickstoff des Harns und seine Bedeutung für die klinische Karzinomdiagnostik.) P. L. J. de Bloeme, S. P. Swart and A. J. L. Terwen.
59 *Kidney Disease in Children. (Nierenerkrankung im Kindesalter.) C. T. Noeggerath and H. Zondek.
60 Hyperleukocytosis from Action of Cold. A. Rovighi and R. Secchi.
61 Diathermia in Ophthalmology. F. Best.
62 Misleading Roentgen Findings with Cancer in Body of Stomach. (Diagnostische Eigentümlichkeiten der Karzinome des Magenkörpers.) H. L. Baum.
63 Resection of Duodenum with Papilla for Cancer. G. Hirschel.
64 *Hour-Glass Stomach with Ulcer. (Sanduhrmagen bei nicht tiefgreifendem Ulcus ventriculi.) W. Nonnenbruch.
65 Radiotherapy from the Surface for Deep Cancer. (Heilung tiefliegender Karzinome durch Röntgenbestrahlung von der Körperoberfläche aus.) G. Schwarz.
66 Emetin in Lamblia Dysentery. M. Mayer.
67 *Pancreas Disease. (Fortschritte in der Pathologie und Therapie der Pankreaserkrankungen.) A. Schmidt.

August 11, No. 32, pp. 1769-1800

68 Why Hemorrhoids Develop. (Enstehung der Hämorrhoiden.) A. Schmincke.
69 Standard Technic for Taking the Temperature. (Notwendigkeit einer einheitlichen Temperaturmessung: Grenze zwischen normalen und pathologischen Temperaturen.) L. Saathoff.
70 Sex and Narcotics as Influencing Serodiagnosis. (Zur Frage der Geschlechtsspezifität der Abderhaldenschen Abwehrfermente und über die Beeinflussung der Abbauvorgänge durch Narkotika.) E. Wegener.
71 Distribution of Fat, Lecithin and Wax-Splitting Ferments in the Organs. A. E. Porter.
72 *Compressor Instrument for Utilization of the Movability of the Skin of the Abdomen in Roentgenotherapy. (Zur Technik der gynäkologischen Röntgentherapie.) D. Chilaiditi.
73 The Ionometer for Dosage in Roentgen Work. H. Greinacher.
74 Red Light in Roentgen Work. (Ein kleiner Vorteil beim Durchleuchten mit Röntgenstrahlen.) R. Geigel.
75 Operation Plus Radiotherapy. (Operation oder Bestrahlung.) L. Heidenhain. Concluded in No. 33.
76 Treatment of Gunshot Wounds. (Behandlung der Schusswunden im allgemeinen.) O. v. Angerer.
77 Surgery at the Front. (Kreigschirurgische Arbeit auf dem Hauptverbandplatz.) L. Schliep.
78 Arrangement of Field Hospitals. (Anordnung der Verbandplätze im Feld.) Schoenwerth.

August 18, No. 33, pp. 1801-1832

79 *Action on Syphilis in the Fetus from Salvarsan Given the Mother. E. Meyer.
80 Artificially Produced Gamma Rays. (Die technisch erzeugte Gamma Strahlung. II.) F. Dessauer.
81 Non-Diphtheric Stenosis of the Trachea in Children; Two Cases, One Fatal. E. Köck.
82 *Recurring Colic in Umbilical Region in Children. P. Tobias.
83 Toxic By-Effects of Embarin. (Toxische Nebenerscheinungen des Embarin.) A. Pasini.
84 Esophagothermia in Treatment of Stenosis. (Heizbare Oesophagussonde zur Behandlung von Stenosen.) W. Sternberg.
85 Medicolegal Decisions. (Der Arzt in der Rechtsprechung. VII.) P. Kaestner.
86 Treatment of Frontal Sinusitis. (Stirnhöhleneiterungen.) E. Winckler.
87 *Treatment of Gunshot Abdominal Wounds in War. E. Payr.
88 Orthopedics at the Front. F. Lange.
89 *Gunshot Wound of the Heart. (Blutender Herzschuss durch Naht und Muskelimplantation geheilt.) A. T. Jurasz.
90 The Service in a Field Hospital. (Der Dienstbetrieb bei einem Feldlazarett.) v. Reitz.
91 *The Wounded in the Various Wars Since 1850. (Kriegssanitätsstatistik.) Schwiening.

55. **Research on the Blood.**—Traube thinks that the physical-chemical properties of the blood-serum have not been investigated to the full, and here reports the results of his own research in this line opening up a promising field for diagnostic deduction. The alkalinity he determines by application of a new and simple principle: The stalagmometer shows about the same number of drops with a 0.2 per cent. solution of quinin hydrochlorid as with water; namely, at 18 C., 49.9 with water and 50.3 with quinin solution. But if a minute quantity of an alkaline solution is added, the number of drops increases in proportion. The same principle can be applied to the serum to determine the acidity. If a stronger acid is added to a 2 per cent. solution of sodium isovalerate, the capillary action of the valerianic acid is reduced and the number of drops increased. These tests are extremely simple. All that is necessary to determine the acidity of the serum is to add 0.2 c.c. of the serum to 5 c.c. of an aqueous solution of 2 per cent. sodium isovalerate, and then note the difference in the number of drops it forms. Or the test can be applied by adding to 1 c.c. of serum, mixed with 9 c.c. water, 4 c.c. 1/100 normal sulphuric acid.

He found that guinea-pig serum containing complement had by far the least viscosity, the least alkalinity and the least capillary action—all tending to show, he says, that the complement properties of a serum are the expression of physical causes. In testing several hundred human serums it was found that with the quinin test (10 c.c. of a 0.2 per cent. solution of quinin hydrochlorid to 0.2 c.c. serum) normal serum behaved like a 0.05 or 0.06 normal solution of potassium hydroxid. With cancer or other cause for cachexia, the alkalinity becomes much reduced. The findings paralleled always the meiostagmin reaction so closely that he thinks the latter is merely an index of the degree of alkalinity and cachexia. The practical value of the research is shown in such cases as when viscosity of 237 is found with a supposed heart neurosis. This finding indicates unfailingly that the trouble is certainly more than a mere simple neurosis. The tests are so simple that any practitioner can apply them and thus throw light on many puzzling cases.

57. **Roentgen Therapy of Cancer.**—Amann states that he has applied Roentgen therapy in 52 cases of uterine cancer. In the 31 absolutely inoperable cases of cancer of the cervix, 5 of the patients were completely or nearly cured, 29 per cent. thus being restored to health when they had been absolutely doomed before. The improved technic accomplishes this, besides, without danger of Roentgen burns even with the far more intensive dosage, while the action on the cancer cells is more destructive. But it is indispensable to recognize and utilize the facts that only certain types of rays are the biologically effectual and harmless ones, and that different tubes and apparatus and even the same tube under different conditions generate entirely different rays. The electroscope permits these different rays to be distinguished

and intensive dosage, he emphasizes, should never be applied without preliminary electroscope tests. When the rays are applied both from front and back to act on an advanced cancer of the cervix, they act on the entire region, all the lymph-glands and adjacent tissues feeling the effect, and thus a more thorough clearing out of the malignant disease is possible, he declares, than could even be realized by operative measures. In one case he had removed a cancer of the cervix three years before and a recurring tumor a year later. Again a tumor as large as a fist developed in the pelvic connective tissue but this was treated with intensive Roentgen exposures and a complete cure followed. The sciatica-like pains and the contracture of the foot from pressure on the nerves vanished and the patient gained in weight. She was in good health for a long time but died suddenly later without recurrence of pelvic trouble. Amann's experience has been so favorable that he thinks the improved technic for Roentgen therapy might be applied even in operable cases.

58. **Colloidal Nitrogen in the Urine.**—This communication from Amsterdam reports tests with the Salkowski-Tojo method the results of which have shown that the original technic does not distinguish with any constancy between normal and cancer urine. But by determining the adialyzable element alone; that is, exclusively the actual colloidal nitrogen in the narrowest sense, a marked difference is apparent between normal and cancer urine. Thus the Kojo-technic nitrogen, the writers conclude, is nothing specific, but its non-dialyzing constituents were only 4.69 to 5.57 in three healthy persons and 7.56 in a patient with pernicious anemia but ranged from 10.74 to 38.64 in four cancer cases, the largest figures being with cancer of the larynx. (Compare with editorial in The Journal, Sept. 6, 1913, p. 778.)

59. **Kidney Disease in Children.**—Noeggerath and Zondek have applied to six children with nephritis and several healthy controls the functional tests and recorded the metabolic findings thereafter, keeping up the tests for several weeks with daily comparison of the intake of salt, nitrogen and water with the elimination through the kidneys. At regular intervals the residual nitrogen was also determined and the salt content of the blood. They do not know of any similar extensive research on children. The practical consequences for effectual treatment have proved useful and illuminating beyond all anticipations and they urge the general practitioner to apply this individualizing treatment of nephritis in children if he can have the chemical tests made for him in some convenient laboratory. The first thing is to put the child on a standard diet: for a boy of 10 weighing 28.8 kg. this may consist of 500 c.c. milk; 50 c.c. sugar; 50 gm. unsalted bread; 10 gm. unsalted butter; 100 gm. potatoes; 80 gm. carrots; 80 gm. apple; 250 c.c. tea; 100 c.c. coffee; 400 c.c. water, and 15 c.c. lemon juice. This totals 1,121 salt; 26.04 albumin; 1,061 water, and represents in all 1,436 calories. (A liter of milk represents in comparison only 670 calories with 1.6 salt and 3.2 albumin.) The tests were made by superposing on this standard ration varying amounts of salt—from 1 to 3, or at most 5 gm. a day—and varying amounts of a commercial food representing 67.4 per cent. albumin, 0.2 per cent. salt and no extractives. This was given up to a dose of 100 gm., mixed with the warm dishes. The fluctuations in the output of salt were as apparent with small amounts of salt as with larger ones.

This research has demonstrated once and for all that the albumin content and the sediment of the urine are far from reliable criteria as to the functional capacity of a child's kidneys. They may be apparently normal while yet the child is unable to tolerate the salt and albumin of the ordinary diet for his age. It sometimes happens that the tolerance for salt becomes upset when albumin beyond what he can tolerate is being taken, or vice versa. In one child palpable edema developed when an excess of albumin was being taken, and it could be banished and recalled at will by varying the albumin from 30 to 85 gm. a day. This happened regularly even after all traces of albumin and sediment had disappeared from the urine. The kidney trouble in this case had followed diphtheria in a boy of 10. As the child recovered from his nephritis this albumin-induced edema disappeared.

One child of 3 with severe uremia and hemorrhagic disease of the kidney was unable to tolerate any salt or albumin and he was tided along past this dangerous stage by being fed exclusively for nine days with sugar. He was given grape sugar at first and then beet sugar, 250 gm. a day, in the form of raspberry syrup. The stools kept good. This supplied ample calories for a weight from 11.6 to 13.7 kg. When the child lost his appetite for this, he was fed exclusively for sixteen days with breast milk drawn and mixed with a little oatmeal gruel to make it taste better. Breast milk contains so little salt and albumin that it can be used in this way to great advantage at times for young children past the nursing age. This little patient was treated besides with venesection, digitalis, diuretics and sweating on the electric pad. With this course of treatment the edema and uremia rapidly subsided. The urine ran up from 150 gm. to a liter in eleven days and the child was not only cured but passed through a severe purulent otitis media six weeks later without any signs of functional derangement in the kidneys under the most searching functional tests. In one case of orthostatic albuminuria these tests showed that there was some functional disturbance.

64. **Hour-Glass Stomach with Gastric Ulcer.**—In the two cases described the ulcer healed under medical treatment and with this the hour-glass shape disappeared and normal outlines were restored. The contracture was thus purely functional.

67. **Disease of the Pancreas.**—Schmidt reviews our knowledge to date in respect to pancreas functioning and derangement, concluding with the statement that everything tends to show that the internal and the external secretion of the pancreas are widely independent of each other. No anatomic basis has yet been discovered for disturbance in the internal secretion and consequently glycosuria alone cannot be accepted for the anatomic diagnosis unless there are other signs of derangement in pancreas functioning. Aberrant islands of Langerhans in the intestinal mucosa, on the other hand, might ward off glycosuria even with complete degeneration of the entire pancreas.

72. **Improved Technic for Roentgen Work.**—A little compressor is illustrated which is used to push over automatically and hold the skin of the abdomen. This makes it possible to expose different areas of the skin without moving the Roentgen tube or the abdomen in applying intensive Roentgen treatment to cancer in the intestines or pelvis. The compressor is of woven catgut, like a tennis racket, and is mounted on an adjustable standard.

79. **Action on Fetus of Salvarsan Given Mothers.**—Meyer cites Sauvage's statement that only 25.46 per cent. living children were born to 217 women with evidences of recent syphilis treated systematically with mercury and iodid, and 10.18 per cent. of the living had signs of syphilis. Meyer then tabulates similar experiences from seventeen clinics to show what can be accomplished with salvarsan under similar conditions. The proportion of children born living was from 86 to 100 per cent. In Meyer's own experience 97.4 per cent. were born living and 86 per cent. were living by the tenth day; 15.8 per cent. of the children had a positive Wassermann. The arsenic content of the placenta corresponds to the arsenic content of the mother's blood but the sound placenta does not allow arsenic to pass. The salvarsan affects the fetus favorably by its curative action on the mother and especially by preventing disease of the placenta. Pregnant women bear salvarsan well; abortion or hemorrhage is not brought on even by intravenous injection.

82. **Recurring Umbilical Colic in Children.**—Tobias has had several cases of this trouble in children like that described recently by Moro and Küttner. Tobias does not accept the explanation advanced by others but thinks the disturbances are caused by the preliminary stages of incipient ulceration in stomach or duodenum; that is, the pains are the result of cramps in the vascular system of these organs. Pallor and syncope frequently accompany the colic and confirm the angiospastic condition. The beneficial influence of belladonna or atropin is further corroboration. Measures

which act by suggestion tend to reduce the nervous excitability. Tobias' assumption is further sustained by the fact that two of the children, aged 10 and 13, developed the classic symptoms of gastric ulcer a few years later, but were cured by the usual medical and dietetic measures. (See Abstract 51, p. 1126, THE JOURNAL, April 4, 1914.)

87. **Treatment of Gunshot Abdominal Wounds.**—Payr has found that the holes made by a small bullet are liable to close up spontaneously but that the blood and fecal matters which escape through the holes at first gradually work their way downward into the small pelvis and are not absorbed, as the collection is generally infected from fecal matter. The consequence is often that an abscess forms here in the small pelvis. He has witnessed this repeatedly after perforation of a gastric or duodenal ulcer; all seems to be going well for a time but then the abscess forms and the walling-off adhesions are broken down and secondary peritonitis results. It usually proves extremely serious, with an unfavorable prognosis. He advocates therefore means to render harmless the infected extravasated blood from a gunshot wound of the abdomen, and suggests two ways in which this can be done. When the patient is seen in the first twenty-four or forty-eight hours he advises making a very small laparotomy incision above the symphysis, under local anesthesia; the incision only large enough to permit the introduction of a rubber drain the size of one's finger, carrying it down into the small pelvis and having the patient keep in a half-sitting position or lie on his side afterward. When not seen until later than this, the space between the rectum and the bladder must be carefully examined through the rectum. If there is any tenderness, protrusion, tenesmus or difficulty in micturition, he advises to open up the region at once. If the swelling is circumscribed, the incision can be made in the rectal wall for the evacuation of the extravasated blood. If no circumscribed swelling can be discovered, but the whole region seems swollen and very painful, indicating peritonitis in the small pelvis already installed and beginning to spread, he advises a parasacral operation. The coccyx had better be enucleated, the rectum exposed and the anterior reflection of the peritoneum incised. The drain introduced into the small pelvis should be held with a stitch, the wound left open and lightly tamponed. Treatment on these principles has rendered him excellent service in many forms of peritonitis after injury and perforation of abdominal organs, and he thinks the technic will be found useful also for the bullet wounds in war.

89. **Muscle Flap to Patch a Heart Wound.**—Jurasz reports a case of attempted suicide by a man of 34, the bullet passing through the left ventricle, making a jagged wound. The hole where the bullet emerged was readily sutured but the other kept up bleeding until finally a small piece of muscle tissue taken from nearby was sutured over the hole. It arrested the bleeding at once. The pericardium was rinsed out with saline until no more clots came away. The pleura contained many clots which were cleared out and a wound in the lung sutured, the pleura also being copiously rinsed out with saline until no more clots came away. There was slight fever, not over 38 C., the first two weeks and the tenth day an extensive sterile serous effusion in the pleura was siphoned out. The pulse all the time was slow, regular and strong. Examined eight weeks later there was no dilatation of the heart or pathologic murmurs and the health seemed to be perfect. When first seen there was no suspicion that the heart had been injured as the course of the bullet seemed against this assumption and the bleeding seemed to come altogether from the lung. The absence of infection he ascribes to his copious rinsing out of the pericardium and pleura.

91. **The Morbidity and Mortality in the Wars of the Last Sixty Years.**—In an interesting table are shown statistics relating to the twelve wars that have been waged since 1854, beginning with the Crimean War: The duration of this was twenty-eight months; forces engaged, 97,864 British and 309,268 French; with morbidity of respectively, 1,475.4 per thousand and 1,168.8 per thousand and mortality of 179.6 and 191.7; killed in battle, 28.2 and 26.7 per thousand; wounded, 186.8 and 128.9 per thousand, and died of wounds, 18.9 and 32.1. The total mortality was thus 226.7 and 250.4 per thousand. None of the other wars since approached this mortality. The total mortality among the Germans in the Franco-Prussian war is stated as 18.2 per thousand from disease and from wounds 34.7, during the twelve months of the war. The force numbered 815,000. In the Russian-Japanese war of 1904-5 the Russians lost from disease 13.3, and from wounds 48.6 per thousand and the Japanese, respectively, 41.8 and 90.6. The progress of surgical and medical science is shown by the constantly lowering percentage of the wounded who die from their wounds. This is stated as having been 24.9 among the French in the Crimean war; 11.1 among the Germans in the Franco-Prussian war, 1870-1; in the Russo-Japanese war, 6.8 per cent. among the Japanese and 3.2 per cent. among the Russians.

Zentralblatt für Chirurgie, Leipzic

August 29, XLI, No. 35, pp. 1409-1432

92 *Paravertebral Anesthesia in the Service of Gall-Stone Surgery. A. T. Jurasz.

93 *In Operating on Varicose Veins. R. Gutzeit.

92. **Paravertebral Anesthesia.**—Jurasz calls attention to the advantages of this method of nerve-blocking for gall-stone operations when general anesthesia is contra-indicated for any cause. He reports two cases in which it answered the purpose perfectly, no further anesthetic being required for the skin or peritoneum. The patients were debilitated women of 39 and 73 with much dilated hearts. He injected 5 c.c. of a 1 per cent. solution of novocain on one side at each segment of the spine from the sixth dorsal to the first lumbar, a total of about 40 c.c. In ten minutes the anesthesia was complete and the abdominal walls had relaxed. There was no pain when the bile duct was opened and gall-bladder removed. There was no operative shock in either case; the pulse was weak to start with but did not grow any weaker. The anesthetic is injected with a long fine needle on a level with the tip of the spinous process, and the lower margin of the transverse process is sought with the needle and close to it, just below, the needle is pushed in ½ to 1 cm. deeper, pointed a little more toward the median line, pushing the tip in cautiously until the patient feels a pain radiating forward. Then 5 c.c. of the fluid is deposited here and by the end of a minute there is no further pain. He leaves the needle in place and takes another for the next injection, using the first again for the third injection, and so on. As the technic is rather tedious and as the patient has to stand the brief pain when each nerve is reached in turn, the method is not adapted for general use, but may have life-saving value in cases in which general anesthesia is contra-indicated.

93. **Improved Technic for Operations on Varicose Veins.**—Gutzeit has the shaved leg rubbed with alcohol and then traces with a blue indelible pencil the course of the veins in question. When the leg is dry it is painted all over with 5 per cent. tincture of iodin. The veins then all stand out black on the brown background and show up plainly even when the region is covered with blood.

Zentralblatt für Gynäkologie, Leipsic

August 29, XXXVIII, No. 35, pp. 1201-1216

94 *Formaldehyd Cauterization to Arrest Climacteric Hemorrhage. (Konzentriertes Formalin, das am schnellsten und sicherste wirkende chemische Mittel zur Behandlung klimakterischer Blutungen.) E. Gerstenberg.

95 Acetonuria Following Spinal Anesthesia. G. Gellhorn (St. Louis).

94. **Concentrated Formaldehyd in Treatment of Climacteric Hemorrhage.**—Gerstenberg states that he uses a solution containing 40 parts formaldehyd in 60 parts of water to paint the uterine mucosa to arrest climacteric hemorrhage, and has never had any mishaps with it. It advantageously substitutes for or supplements curetting or roentgenotherapy while it is far superior for numerous reasons to atmocausis or zinc-chlorid applications. He even affirms that if uterine hemorrhage in women of 40 to 50 is not arrested by two formaldehyd applications in this way, some special cause for the hemorrhage is more than probable. The trouble generally proved to be myoma in his cases; in one the myoma pre-

vented the formaldehyd from reaching the mucosa above it. He applies the formaldehyd for fifty seconds altogether and uses two sounds at once. Otherwise his technic is the same as in his first communcation on the subject in 1900.

Zentralblatt für innere Medizin, Leipsic

August 29, XXXV, No. 35, pp. 825-840

96 The Sense of Taste. (Der Geschmack.) W. Sternberg.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 23, XXXV, No. 101, pp. 1057-1072

97 Serodiagnosis of Tumors. (La reazione di Abderhalden nella diagnosi dei tumori.) F. Lanzarini.

August 25, No. 102, pp. 1073-1080

98 *Helminthiasis. (Patologia degli ascaridi.) G. Slaviero.

August 27, No. 103, pp. 1081-1088

99 Peritoneum Flaps. (Alcune esperienze di innesto libero del peritoneo.) T. V. Caldesi.

98. **Disturbances from Ascarices.**—Slaviero remarks that the pendulum is now swinging back to a more rational estimation of the pathologic importance of helminths, from the exaggeration of the old days and the recent opposite almost total disregard of them. He has lately encountered three cases of obstruction of the bowel by ascarides. The patients were boys of 12 and 13 and a woman of 27. The seat of the obstruction and intense pain in the abdomen changed about in the first boy and in twenty-four hours there was retention of urine and other evidences of acute cystitis. Numerous ascarides were passed in the stools and finally a conglomerated bunch of 28, after which all symptoms subsided. The woman patient was of a tuberculous family and for six months had pain in the ileocecal region, aggravated by walking, and strictly localized. The pain then became suddenly intense, with collapse, and spread throughout the abdomen. She improved under treatment but then the pain became localized in the bladder with tenesmus and painful micturition. The urine contained fecal matter and the fifteenth day an ascaris, 16 cm. long, came out through the urethra. She improved after this but still had pain in the right flank and lumbar region radiating down to the bladder. Slaviero's diagnosis is that a tuberculous process exists in the intestine and had opened a passage into the bladder which has since closed. In the third patient the symptoms were sudden severe delirium, with hallucinations. It came on without fever or pain and lasted for several hours with a few brief lucid intervals. Then consciousness returned and the boy complained of oppression in the epigastrium. After a dose of calomel several ascarides were passed and the nervous symptoms subsided. A few months later the same toxic syndrome of acute, transient delirium developed anew and yielded again to a vermifuge.

Pediatria, Naples

August, XXII, No. 8, pp. 561-640

100 Purulent Disease of the Urinary Apparatus in Infants. S. Cannata and G. Caronia.

101 Areas of Thoracic Dulness in Infants. (Significato di alcune ipofonesi toraciche nella patologia del lattante.) S. Maggiore.

102 *Digestion of Starch and Milk in Infant's Stomach. (Fenomeni digestivi che si svolgono nello stomaco del lattante alimentato con farine lattee.) F. Luna.

103 *Causes of Congenital Hydrocephalus. F. Amenta.

104 *Malaria in Infant, Probably Congenital. M. Manca.

102. **Digestion of Starch in Infant's Stomach.**—Luna examined the stomach contents at regular intervals after a test starch-milk feeding, studying the effect of five different variations of the salt and starch content of the food. When there were no salts in the food, the mixture was hypotonic in respect to the blood serum and the consequence was that larger amounts of hydrochloric acid were secreted than when there were salts in the food. When the starch in the food was given already diastased, large amounts of hydrochloric acid were secreted but as there was nothing to bind it all, some free acid was left in the stomach content. This does not occur with milk alone or not until tardily. For this reason diastased starch is advantageous only when there is abnormal fermentation in the gastro-intestinal tract from the presence of bacteria which tend to make the reaction alkaline (putrefaction). When the tendency is to acid reaction, then more acid is injurious, and consequently diastased starch is contra-indicated under these conditions. On the whole the research reported emphasizes that starch overstimulates the secretory function of the stomach at an age when it should still be spared, as is the case on a milk dict.

103. **Congenital Hydrocephalus.**—In Amenta's eleven cases of congenital hydrocephalus the Wassermann reaction was positive in seven, and also in some of the parents even when the Wassermann was negative in the infant.

104. **Congenital Malaria.**—The babe was found to have typical malarial chills and fever when it was 27 days old, and they may have been present before and escaped detection. The mother had contracted malaria two years before and still suffered from it. This is the first case Manca has encountered in eighteen years of practice in which a congenital origin of the malaria seemed probable, although many children are affected in this region.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 27, LVIII, No. 26, and Supplement, pp. 2419-2578

105 *The Hemorrhagic Syndrome in Various Diseases. P. G. J. Duker.

106 Is There a Connection Between the Location of the Transverse Sinus and the Shape of the Nasopharyngeal Cavity? (Is er verband tusschen de ligging van den sinus transversus en den vorm der neus-keel-holte?) E. W. de Flines.

107 Blocking the Brachial Plexus; Five Cases; Menacing By-Effects in One. S. S. Hylkema.

105. **Hemorrhagic Syndromes in Various Diseases and Intoxications.**—Duker theorizes and cites evidence to prove that poisons which act on the blood cells act likewise on the cells of the endothelium lining the blood-vessels, as the endothelium cells, he reiterates, are nothing else but blood cells in a special morphologic state. In embryonal conditions as well as in pathologic conditions during extra-uterine life the blood cells are derived from the endothelium cells of the blood vessels. The hemorrhages which occur in phosphorus poisoning, purpura, typhoid, leukemia, aplastic and pernicious anemia and in congenital hemophilia are the result of the toxin acting not only on the blood cells, but also on the endothelium of the blood vessels thus rendering them more permeable. This explains why the hemorrhages occur at so many points. He refers to Barker's report in 1910 of aplastic anemia developing in three young men professionally exposed to the fumes of benzol, adding that this was the basis for Koranyi's use of benzol in treatment of leukemia, seeking to utilize the destructive action of the benzol on the blood cells.

Norsk Magazin for Lægevidenskaben, Christiania

September, LXXV, No. 9, pp. 1001-1104

108 The Mentally Deficient and the Law. (De sindssvake og deres retsstilling.) R. Vogt.

109 Acute Tuberculous Peritonitis in the Puerperium. G. Benestad.

Ugeskrift for Læger, Christiania

August 20, LXXVI, No. 34, pp. 1449-1494

110 *Acetyl-Salicylic Acid in Treatment of Asthma. G. Jepsen.

111 Inhalation Mercurial Treatment. (Emikuren, Et Forsøg paa en Kritik.) S. Lomholt.

August 27, No. 35, pp. 1495-1540

112 The Conjunctiva Is Not Usually Sterile in the Newly Born. A. Bernsten.

113 Electro-Gymnastics and Bergonié's Method. H. Jansen.

114 Radium and Roentgen Treatment of Uterine Cancer. A. G. Lauritzen.

110. **Acetyl-Salicylic Acid in Treatment of Asthma.**—Jepsen has suffered from asthma himself and has found great relief from acetyl-salicylic acid, as also a number of patients, as he describes in detail. The dose was 1 gm. and it always helped at once and has served to ward off impending attacks. Some of his patients have been thus taking it for two years, one for three. In some other cases no benefit was apparent from it and only epinephrin gave relief. All had a vasomotor rhinitis which suggests that reflex action from the nose may be an important factor in asthma. Treatment of the rhinitis is thus an indispensable preliminary to treatment of the asthma. The asthma subsided completely during acute intercurrent diseases in his patients.